

ECONOMIC ESSAYS AND ADDRESSES

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PREFACE

NEARLY all the essays and addresses collected together in this volume have already appeared in print. The sources from which they are taken and their dates are indicated in footnotes; and the thanks of the authors are due in several cases for permission to reprint. Most of the papers are addressed to professional economists, but the first two of Part I and the last of Part II may also be of interest to the general reader. Part I deals with several different topics, while Part II is concentrated on monetary problems. We have thought that it would be pleasant to bring our sheaves together into a common volume: but each of us is, of course, responsible only for the opinions expressed in his own contribution.

A. C. P.

D. H. R.

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PART I

By A. C. PIGOU

I

THE FUNCTION OF ECONOMIC ANALYSIS¹

Two years ago Sir Josiah Stamp delivered on this foundation a stimulating and valuable address entitled "The Statistical Verification of Social and Economic Theory." In the course of it he said: "It is my view that the analytical method on the lines of Ricardo, Mill and Marshall has, for the time being at any rate, reached the limit of its usefulness. I believe that for the next advance we must depend upon realistic statistical investigation and verification, and that we stand on the threshold of a new method which is of general application." These sentences are put in a challenging way; and one might imagine there springing up about them a new battle of rival schools, such as raged in days gone by between the advocates of induction and deduction, or between the historical school and the mathematical school. Those are barren wars; they centre often on differences about words rather than about meanings; they block, by needless controversy, the advance towards the goal of knowledge of those who are in truth allies. When, therefore, I cite that passage from Sir Josiah Stamp, I do not do so as the text for a polemic. I should not, indeed, myself have written in those terms. I should not have spoken of *the* analytic method, and, if I had, I should not have set it in contrast to "statistical investigation and veri-

¹ Sidney Ball Lecture at the University of Oxford, May 1929.

fication." Rather I should have regarded these as instruments, now happily becoming much more perfect than they were, to be used to help analysis in its task. But there is nothing there of substance: it is an issue, not about ideas, but about ways of expressing them. I have cited Sir Josiah Stamp's address, not as a subject for criticism, but with, I fear, a too ambitious hope—for Sir Josiah combines in a unique manner the man of thought and the man of affairs—that my address may serve in some sense as a supplement and companion to his.

By the term economic analysis, in the title of this lecture, I do not mean, as I have already implied, any particular method of analysis. I am not thinking of deduction versus induction, or of mathematical method versus literary method, but of something much wider. The contrary of analysis, from my point of view, is mere description of events as they have occurred in space-time. Any effort that seeks to explain events, to trace the sequence of causes and effects, to discover laws of wider or of narrower application, in short to dig below the surface of a field for the roots of plants that grow there, is for me analysis. With different problems and with different sets of data, different detailed methods are appropriate. Of these I shall say a little presently. But first there is a distinction to be drawn of a more fundamental kind. In handwork, as everybody knows, some men are primarily engaged in making tools, some in using them, and, even when both offices are performed by the same man, the offices themselves are quite different. It is the same with brainwork. There too tool-making stands in contrast with tool-using; the construction of machinery with the operation of that machinery to yield its appropriate product. Sometimes a machine will be made, so to speak, for its own sake, without any regard for what may be done with it; and, years afterwards, a workman other than the inventor, finding it to his hand, may employ it in the solution of some problem of which the inventor had no thought at all. In this way, if I am not misinformed, Einstein found to his hand a technique in

pure mathematics designed by Riemann, and with the help of it built up his own great contribution to physics. Sometimes, on the other hand, an inventor, working at a current problem and finding the need of a tool, may himself build the tool with a special view to that problem. Newton's work on the differential calculus originated, I understand, in this way. Among persons interested in economic analysis there are tool-makers, tool-users, and those who play a double part. Edgeworth in his *Mathematical Psychics* was making tools: Sir Arthur Salter in his *Allied Shipping Control during the War* was using them: Marshall in his *Principles of Economics* was both making and using them. In the statistical field Professor Karl Pearson is predominantly a tool-maker: Dr. Bowley and Dr. Stamp predominantly tool-users. Tool-making is not necessarily more difficult work than tool-using, but it is generally of wider scope, because, when once a tool has been built, it may be used many times on many different problems.

Now, of course, an able man who is chiefly interested in tool-making will on occasion also use his tools; and one who is chiefly interested in tool-using will also on occasion make tools for himself. But, nevertheless, the difference between the bent of their minds inevitably shows itself in the general character of their work. During some thirty years until their recent deaths in honoured age, the two outstanding names in English economics were Marshall at Cambridge and Edgeworth here in Oxford. Their contrasted methods illustrate what I am saying very clearly. Edgeworth, the tool-maker, gloried in his tools. He would make them for the sake of making them; and he would, I suspect, have cherished more dearly a well-fashioned probe, for which no use whatever could be found, than a serviceable but clumsy blade. Marshall, on the other hand, had what almost amounted to an obsession for hiding his tools away. He would work out a problem, for example, by a mathematical technique, and would then spend endless trouble in burying the technique in language designed to sound as platitudinous as he could

make it. In Edgeworth's work the student knew what he was up against; he might not be able to understand it, but, if he did not, there was little danger of his imagining that he did. In Marshall's work, on the other hand, there was great danger of this. Indeed, I have sometimes used as a means of sifting the sheep from the goats among economic novices the question "Do you understand Marshall's *Principles*?" If they said "No" they might, perhaps, be sheep; if they said "Yes" they were beyond peradventure goats! Sometimes, being myself addicted to high places, I have been tempted to think of these two great men as contrasted types of mountaineer. I have imagined myself meeting them on the summit of a difficult Alpine peak. Edgeworth is there, festooned around with rubber shoes, crampons and all the paraphernalia of his craft, his hands torn and bleeding, his clothes in rags: Marshall is seated by his side dressed in an elegant summer suiting and—if I may plagiarise the late A. D. Godley—pretending with all his might to have stepped from a passing balloon! But a careful survey of the horizon shows that it was not in that manner that he arrived! No: these great twin brethren have both ascended by ice-slope and chimney and slab; but the one is more interested in the process, the other in the goal! To both types of mind economic science owes much.

Now, of course, the tools of which I have been speaking so far are, so to say, *public* tools—pieces of analytic machinery accessible to all. But these are not the only tools that students of any science in practice use. On the contrary, each of them in his work employs also further tools peculiar to himself. I do not mean that he has secret formulæ like a maker of patent medicines. The tools of which I speak are private for separate individuals because they are built into their separate subconscious minds. They are not formal methods at all, but instincts, intuitions, what you will! Of two men of apparently similar knowledge and attainments, one, as everybody knows, will bungle round the edges of a problem, the

other will go to the heart of it. Partly, no doubt, the quality of a man's private machinery depends on the extent to which he makes use of it and can be improved by practice and training. But in the main, as, for example with that strange faculty which in business men we call shrewdness, it would seem to depend on original native endowment. However that may be, it is clear that in all kinds of work, whether mental or manual, private tools are needed. These are everywhere indispensable. But different sorts of work differ a great deal in respect of their dependence upon what I have called public machinery or public tools. For example, to take a trivial instance, in the art of climbing rocks, so far as the leader is concerned, no public tools are used: only the private machinery of a personal technique. In the art of ice-climbing, however, a public tool—whether an axe to cut steps or ice-claws for the feet—is essential: nobody in the world could lead up a steep slope without one. There is a similar distinction among intellectual pursuits. The machinery on which a literary critic relies is, I imagine, almost entirely the private machinery of a delicate and appreciative taste. The physicist, on the other hand, wields a tremendous public apparatus of formulated mathematical theorems. These differences have one very obvious practical consequence. Where the tools in use are chiefly private tools, persons with no training and no native aptitude frequently believe themselves fully qualified to form and pronounce judgment; but, where the use of public tools has to be mastered, such persons are relatively modest. For example, in this country a magistrate, who has perhaps never heard of Kant, will readily undertake to decide whether a particular book or picture has or has not an immoral tendency; but one who has never heard of Newton will hardly consent, even if ordered by the Home Secretary, to forecast the date of an eclipse! In this matter economics is in a somewhat delicate position. There is in it a considerable apparatus of public tools which experts employ, and without the help of which nobody except a genius can hope to accomplish

much. But *something* can be accomplished without these tools; and, indeed, it may well happen that, just as a boy who relies on instinct often fights better than one who has half learnt to box, so a man with no pretence to economic training may see farther into an economic problem than one the free play of whose mind is hampered by a partially understood technique. Naturally, therefore, the need for and purpose of public tools in economics is not realised by the general public as it is realised in physics; and the manipulation of them is sometimes regarded as a more or less harmless specialism without relevance to real problems. There is a misconception here which cannot be overcome by argument, and will only melt away as, by competent use of our tools, we succeed in elucidating these problems.

The principal tools in the economic workshop are ranged about the central idea of demand and supply—the idea, namely that values are determined by a balancing at a margin of the influences that determine how much of a thing people demand at different prices and how much of it at different prices they will supply. I do not in this connection employ the familiar phrase “the law of demand and supply” for the reason—I confess it to my shame—that I have never yet been able to understand what—if anything—that phrase means: often though it has done service with public men as an excuse for leaving unredressed some manifest inequity. There is, however, no question that, if one is investigating the value, or a movement in the value, of some commodity, the *method of analysis* by way of demand and supply is an extremely useful tool. In connection with it there have been developed the important concepts of elasticity of demand and supply; consumers’ surplus; quasi-rent, to deal with complications due to the element of time; the distinction between internal and external economies; the distinction between private net product and social net product at the margin; and so on. Moreover, a considerable structure of a semi-mathematical kind⁴ has been built up, which enables us to express the quantita-

tive effect to be expected from various sorts of taxation and of monopolist action in terms of the elasticities of demand and supply of the relevant elements; subject, of course, to reservations of a technical character that need not be considered here. Besides these and other tools which they themselves have contrived, economists are coming to employ more and more in their work tools constructed by statisticians: methods of sampling, methods of correlating different series, and so on.

Let us look next at economic tools more in detail. It is plain at once that the bulk of them are structurally very simple. For example, Marshall's fundamental idea about the way in which the value of money is determined is simply this: that in given conditions people choose to hold in the form of ready purchasing power an aggregate real value which stands in some definite proportion to their real income. This conception enables him to build up a structure of monetary theory, which is not only completely coherent with his general theory of value, but can be successfully applied, with no fundamental modification, to elucidate the variegated happenings of the war and post-war periods no less than the more staid events prior to 1914. Thus, in general, economic tools are not elaborated buildings but rather keystones. Unlike the tools of physics, and like those of biology, when once they have been manufactured, their nature and significance can be understood without any great intellectual effort. For this reason there is a certain risk that the work of the men who made them may be undervalued; we are readily tempted to believe that what is easy to understand must have been easy to discover. That, I suggest, is a delusion. The great leaps of genius that set thought on a new track are often simple in that sense. Nothing could be simpler or easier to understand, when set out, than Mendel's conception of the fundamental nature of inheritance. With Newton himself the flash of vision that gave his master-thought was simple: that the movement of the apple to the earth and of the moon round it are manifestations of a single law. It was in this

flash of vision—this simple thing—not in the elaborated technique of proof and verification, that his transcendent genius spoke. Let us not, therefore, in economics imagine, merely because our tools are simple, that they could have been made for us by men of small minds.

None the less, the thought-tools of the economist are, I think, in themselves and for their own sake of little interest or importance. The pure mathematician would protest—and rightly—if anyone should regard his structures as merely tools for physics and other applied sciences. But then his structures—if one who knows them by repute alone may venture to speak—constitute immense and imposing triumphs of the human intellect. They are much more than tools: they are themselves works of art. No claim of that kind can be made for the structure of pure economics. These are tools only. Those of them that cannot be made to work in elucidating the problems of the real world must be scrapped: there is no place for them in the gallery of art. But, though they are only tools, as tools they are vital. No mountaineer regards an ice-axe as more than a tool; but any mountaineer who on a serious expedition neglected to carry one—would deserve no wreath at his funeral.

I pass now to the second division of my subject-matter. While, with Mill's claim to finality for his theory of value before us as a warning, few economists would venture to assert that the furniture of their tool-shop is as yet complete or nearly complete; and while, in accordance with what I have already said, it may well happen that a man who sets out to apply existing tools finds himself in the course of his work inspired to devise a new one; yet, for the majority of economists, economic analysis is likely to mean, not making tools for themselves, but using the tools already made by others. For what end do they use these tools? What is the function of economic analysis as handled by them?

If we are among those who like to contemplate a high-sounding programme, we may perhaps answer in some such strain as this. The function of economic analysis—

That part of it which is not tool-making—is to build up, as far as may be, a conceptual working model of the body economic as it lives and moves: to display its anatomy and physiology, the interaction of its several parts, the process of its growth, the response it tends to make to various kinds of stimulation, and so on. This sort of statement is perhaps useful as a stimulus. But it does not at all picture the everyday work of the general body of economists. That work is much more a piecemeal affair—attacks on particular problems or bits of problems rather than sweeping studies of the economic world as a whole. By what mechanism in existing conditions is the real income of a community distributed among its members and as between the various factors of production that they severally wield? How far are classical doctrines on this matter modified by the growth of collective bargaining between large groups of workpeople and employers? In what ways does the garment of money, which enwraps trade and industry, alter as well as veil these processes? What are the influences that regulate the terms of interchange between our imports and our exports: why is it that a given volume of exports now brings in a much larger volume of imports than it used to do before the war? How in various circumstances does a particular kind of tax or system of taxes react upon the price level? In our attacks upon these various problems there is, indeed, a certain unity of *method*, because, while related to quite different subject-matters, they are all particular instances of the general problem of value. But there is not, I think, any great intellectual interest in this kind of unity. It is very different from Newton's unity of the apple and the moon. We are much more excited to know that these two things move in accordance with the same formula than to know *exactly how* either of them moves. This is not so in economics. Nobody cares a great deal that fluctuations in the real wages of bricklayers and fluctuations in the purchasing power of money are *kindred* events: we are not interested in their kinship, but in each event for itself. That is what I

meant by saying that the main part of "an ordinary economist's work is piecemeal; the piecemeal study of particular parts and aspects of economic life.

It is of this part of economic analysis, the using of economic tools for the elucidation of defined and limited problems that, as I imagine, Sir Josiah Stamp was chiefly thinking in the lecture to which I have already referred. For plainly, if tool-making be conceived as I have conceived it, there is little scope in that field for statistical studies; whereas in the use of tools for the purposes I have been trying to describe there is large scope for it. The phrase "*statistical verification of economic theory*" does not, however, seem to me well adapted to bring clearly to light the nature of the service which statistical studies can render. This is, I think, twofold. On the one hand they may in certain circumstances enable us to pass from what Marshall called qualitative to what he called quantitative analysis: to pass from merely saying "this kind of cause will have that kind of effect" to saying "so much of this kind of cause will have so much of that kind of effect." On the other hand, when different time-series are brought into relation with one another, whether by means of charts or by the device of correlation, they may provide valuable suggestions about causal relations and thus open up fruitful lines of study.

Of the first of these services I need not say much. It is well known that the effect on prices that may be expected to result from the imposition of a tax, from the introduction of monopolistic action and so on, can be determined by means of formulæ in which the functions of demand and supply, or, more roughly, the elasticities of demand and supply, are involved. If the numerical values of these elasticities were known, numerical answers to the question by how much would the imposition of such and such a small tax on such and such a commodity raise its price, provided that other things remained the same, would result. Thus the numerical determination of elasticities would enable our treatment of problems of taxation—and it is easy to see that the same thing is true of many

other problems—to be enormously improved. But the numerical determination of elasticities is obviously only possible through statistical studies of prices in relation to quantities purchased and quantities supplied. There are very great technical difficulties in the way of these studies. I do not propose to discuss them now. Very little has hitherto been accomplished in this field; but I am not among those who believe that the difficulties are insuperable.

The second way in which statistical studies can help in using economic tools, namely comparisons of the movements of different series with a view to elucidating causal relations, has recently been brought into great prominence by a distinguished group of American workers. The simplest form of this technique is to set out the several series to be compared—say, the percentage of unemployment and some index of general prices for successive years or months—in the form of graphs, and to examine by the eye the way in which the movements of the two or more curves are related to one another. It may be found that upward movements of one of them are usually associated with upward movements of the other; or with downward movements of the other; or that the two curves move similarly—or inversely—but that one tends to lag in a regular manner behind the other. Plainly, if the relation between the curves is fairly clear cut, we have reason to suspect that there is some causal connection, either direct or indirect, between them.

This simple technique has been developed and elaborated into an imposing structure. When one or more of the series to be compared has a pronounced upward or downward trend, it is sometimes necessary to eliminate this trend before the relation between the short-period movements of the series can be clearly seen. For doing this sometimes a rough-and-ready device, sometimes a complicated one is employed. Again, whether or not trends have to be eliminated, it is becoming common to supplement inspection by the eye by working out correlation coefficients; and to use these as a means of testing

how much, if at all, movements in one series lag behind movements in another. Yet again, it is sometimes found that movements in one series, which do not seem to have any obvious relation to *movements* in another, bear a close relation to *rates of change* in movements of the other. This relation, like the simpler direct relation, can, at choice, be depicted on a graph or summarised in a correlation coefficient.

I shall not, I hope, be suspected of undervaluing this technique or the services of those who are engaged in elaborating it and applying it to economic problems if I suggest that persons handling it rashly may easily become entrapped. It is extremely tempting, when one sees two curves moving together, particularly if the second lags slightly behind the first, to jump, without further inquiry, to the conclusion that its movement must be caused by the movements of the first. When the issue is set out in abstract form it is obvious that this inference is not secure, because the movements of both series may be the joint effect of some third factor by which both are determined. But, when wrapped up in the garments of real life, this is not so obvious. When it is argued, for example, that inoculation against plague in India cannot possibly have accomplished any good because, as statistics show, in the very districts where inoculation is most largely practised plague is most severe, not everybody, perhaps not even everybody here, would instantly see through the sophism! But there is another trap much more subtle than the trap of the suppressed third cause. When it has been shown that, if a causal nexus, direct or indirect, were *not* present, the odds would be, say, 10,000 to 1 against two series being related in the way in which in fact they are related, it is extremely tempting to step on and say: "*therefore* the odds are 10,000 to 1 that a causal nexus *is* present." But this is a fallacy in the logic of probability. It is an enormous number of millions to one against anybody dealing himself at bridge by fair means three hands all containing four aces, four kings, and four queens in the same evening;

But, were the Archbishop of Canterbury to accomplish that feat, it would not be that number of millions to one that the Archbishop had employed unfair means! It was on account of this point of logic that I was careful, a little while ago, to say that correlations between series may render service in *suggesting* causal connections: I did not say in proving, or even in making probable, such connections. When a striking correlation suggests a causal nexus, we must not stop at that. We must set our economic tools to work and try to discover by what process it is plausible to suppose that our two series are bound together. If we can discover no such process, if, on the basis of our general knowledge and experience, it seems to us incredible that any such process exists, we must suspend judgment. It is extraordinarily improbable that the Archbishop should by accident deal himself in one evening three hands each containing four aces, four kings, and four queens: but it is also extraordinarily improbable that so eminent a son of Oxford should cheat at cards! Statistical correlations—if I may sum up the gist of my argument—can give invaluable indications as to where our economic tools may be usefully employed; they can also confirm and corroborate; but they do not and cannot warrant us in leaving the tools behind.

After so much that has been negative, I should perhaps attempt to illustrate by some positive example the kind of work that economic analysis has to do. Consider the assertion "a falling price level benefits the wage-earning classes"; and the contrary assertion "a rising price level benefits the wage-earning classes." An economist is requested, let us suppose, to make a report on the matter at issue. What will he do? First, I imagine, he will collect, over as long a period as the data allow—for simplicity I suppose that he is instructed to confine his researches to this country—the facts about the general price level, money rates of wages, the prices of the things wage-earners buy, and the fluctuations of employment. The statistical material available is, he will find, very

inadequate and unsatisfactory: but he must make shift with it as best he can. A very short study of it reveals a pitfall. The conception of rising or falling prices is not simple and definite, but covers two distinct types of event. When a curve is drawn out on the basis of Jevons's and Sauerbach's figures, to illustrate the movement of general prices in the United Kingdom during the last hundred years, the curve is found to be complex in character; it contains both a succession of four principal long-period trends and, superimposed upon these, a number of shorter "cyclical" movements. Thus from the end of the Napoleonic wars till 1850 the trend was downwards, from 1850 to the early 'seventies upwards, from then till 1896 downwards, and from 1896 till the outbreak of the war again upwards. These facts are brought out very clearly by Sir Walter Layton in the following table:

Quinquennial Average Index-Numbers and the Turning-point in the Price Curve.¹

		Percentage change in the period.
1821-6	154	-25 per cent.
1846-50	116	
1871-5	138	+20 "
1894-8	82	-40 "
1906-10	102	+25 "

During these several periods, however, the movement was not continuous. It proceeded in a series of waves, so that, when the general trend was falling, a high point on a later wave might, nevertheless, be higher than a low point on an earlier wave, and, when the general trend was rising, a high point on an earlier wave might similarly be higher than a low point of a later one. In view of this complex character of the price curve it becomes apparent that the

¹ *An Introduction to the Study of Prices*, p. 23.

Issue is a more difficult one than our imaginary disputants had supposed; that upward (or downward) movements in the trend of prices may affect the fortunes of wage-earners in one way and upward (or downward) oscillations about the line of trend in a different way. Clearly an attempt must be made to study first trends apart from oscillations and, secondly, oscillations apart from trends.

For the investigation of trends, though not for that of oscillations, we may properly leave out of account variations in the percentage of workpeople who are unemployed, and use as a measure of the fortunes of the wage-earning classes index-numbers illustrating the course of *rates* of real wages. Such index-numbers, though very insecurely based, are available for the United Kingdom since 1850; and, for earlier years, though no index-number of wages has been constructed, we have a certain amount of general information. It will be remembered that from 1820 to 1850 the trend of prices was downward, from 1850 to the early 'seventies upward, from the early 'seventies till the middle 'nineties downwards, and from the middle 'nineties till the outbreak of the Great War upwards. The state of real wages in these four periods may be summarised as follows. During the first period of falling prices, from the end of the Napoleonic wars till about 1850, the wage-earning classes were very badly off, and the rate of real wages was at best rising slowly. During the first period of rising prices, from the early 'fifties to the early 'seventies the rate of real wages was rising fast. During the second period of falling prices, the early 'seventies till about 1896, this rate continued to rise substantially. During the final period from 1896 to the outbreak of the war, when prices were again rising, the upward movement in the rate of real wages was checked, and, at all events if we ignore the shifting of workpeople from lower-paid to higher-paid occupations, this rate actually fell. From these facts it is impossible to establish any sort of statistical connection between price trends and the rate of real wages. The witness of

the first two periods suggests that rising prices are associated with greater benefit to that rate than falling prices: the witness of the second two periods suggests an exactly opposite conclusion.

A little disappointed with this result, our investigator turns to the study of oscillations in the price level about the line of trend. In attempting to elucidate the relations between this movement and the fortunes of the wage-earning classes he is, of course, no longer free to ignore fluctuations in the percentage of unemployment; real wages corrected to allow for these fluctuations have to be used. If a graph representing real wages so corrected is set beside a graph of prices, it is seen that during the last trend period, from 1896 onwards, there is a marked positive correlation between oscillations about the trend of corrected real wages and of prices; periods of high (relative) prices being also periods of good fortune for wage-earners and periods of low (relative) prices periods of bad fortune. If, however, we extend our view so as to cover also the two preceding trend periods, this definite relationship is no longer found. We are entitled to conclude in a broad general way that upward price oscillations tend to be associated with improvements in the fortunes of wage-earners, and conversely; but there are important exceptions to this tendency, and corrected real wages are often found oscillating in one direction while the price level is oscillating in the opposite direction. Thus a statistical study of oscillations, though it does not, like a study of trends, lead to a completely blank wall, cannot be said to help us very much.

The inconclusive character of these results must suggest to our imaginary inquirer that, even when he has distinguished between trends and oscillations, the issue which he has been trying to adjudicate is still not properly stated. He will then recall that upward (or downward) movements in the price level are not isolated events, but are themselves consequences of causes; and that these causes may consist in changes in the productivity of industry; in changes of the supply of money; in changes

of the supply of credit; or in certain other more complex sorts of change which I need not now specify. Hence, when prices rise, there is brought to bear upon the fortunes of wage-earners not only the price change itself but also the causes underlying it. So soon as this fact is grasped, it becomes obvious that a knowledge of the historical associations between price movements and movements in real wages cannot possibly reveal the effects which price movements, considered by themselves, tend to bring about; and that the effects of the total situation, of which price movements are a part, are very unlikely to be similar when the causes of the price movements are different. Thus the first section of our investigator's report will conclude that the issue which he has been asked to adjudicate is a false issue; that it embodies, not a single question to which a single answer "yes" or "no" can be given, but a confused jumble of several questions, which are quite distinct and to which separate answers are needed. He will end this part of his report by tabulating in a careful manner what these questions are, announcing that in the second part he will attempt to answer them; and at this introductory stage—for we are here concerned with generalities, not with a particular problem—we may bid him a polite farewell.

Up to this point I have described economic analysis—the part of it other than the tool-making part—as concerned with the elucidation of certain facts or groups of facts from the standpoint of causation; with the disentangling and proper labelling, backed, if possible, by statements of quantity, of the various influences by which given situations and given movements have been brought about. This is, everybody agrees, one very important department of the economist's work. But there is also another and complementary department. In that department a central place is occupied by the old notion of maximum satisfaction; and situations and movements are studied with a view to discovering how far the influences in operation tend to make the actual state of this diverge from the *optimum*. Such issues have to be

set out carefully, because the optimum, with which the actual can usefully be compared, is seldom, so to speak, the absolute optimum, but an optimum *relative* to certain conditions. For example, in problems relating to the distribution of labour among various industries, the optimum relative to the real costs involved in movement from one industry to another is much more significant than the superior optimum which emerges if these costs are ignored. In this type of work use is made of the distinction between private cost and social cost, and of the fact that, whereas unhampered self-interest tends to equate marginal demand-price to marginal private cost, this result is not the best obtainable except where, at the margin, private cost and social cost coincide. A surprisingly wide range of problems is open to exploration by this method; and many instances, in which Adam Smith's "invisible hand" falters in moulding the world, can be set by means of it into an orderly and convenient grouping. That there is nothing in physics or chemistry to correspond to this way of approach need not cause us to look on it askance. For it is only in sciences which deal with conscious life that such a notion as maximum satisfaction can, in the nature of things, have relevance.

There is yet one thing to say. In every field of inquiry the function of the student, as of the methods he employs, is to help forward the upbuilding of knowledge. But, whereas in some fields knowledge is an end alone, in others it is both an end and a means. However intimately we learn to understand the courses of the stars, we can never in any degree control them; but, where the processes of human society are concerned, knowledge may carry with it power. Thus, though the primary function of economic analysis ends with the provision of knowledge, it has, in company with many branches of natural science, a secondary function also. The knowledge that it provides may help in some measure—not in great measure, because many factors of a non-economic character are often also relevant—to guide practice. There is, indeed, a long time-lag between the attainment

THE FUNCTION OF ECONOMIC ANALYSIS

of knowledge in economic affairs and its entry into the halls of authority. I do not accept the view, which I have somewhere lately read, that the practical man is one who practises the theories of 200 years ago. The time-lag is not so long as that. But it may well be thirty years or even half a century. The chief reason for this is not, I think, the obvious one that statesmen and politicians, fully occupied as they are with administration and debate, cannot keep abreast of current knowledge. For there is always at their call a brilliant Civil Service, and they may, if they choose, summon outside experts. The reason rather is that the effects which a given line of policy will produce often depend in large measure on the degree of economic knowledge possessed by the general body of the public. For example, every economist knows that in a world of economists it would be easy to set up a monetary machine much superior to the gold standard; but in the world of actual men with their prejudices and ingrained beliefs, where perhaps not one in 100,000 understands the nature of money, it may well be held that an attempt to do this would lead to disaster. Thus, in order that economic analysis may render the full service of which it is capable in helping to guide practice, we need more than the education of statesmen or the provision of an economic general staff: we need also that the main body of the people shall have some training in economics—sufficient training at least to perceive that they do not possess complete training. This level of attainment is already achieved in the natural sciences. As a consequence chemistry and physics can render their full service to the world of practice—and that with very short time-lag—so long as the experts in them continue to advance the boundaries of knowledge. There skilled leaders are all we need. Economics cannot render its full service—perhaps not at all, certainly not without an enormous time-lag—unless the nature of the subject-matter with which its experts deal is understood, not only by their colleagues, but also in some measure by the general body of educated men.

II

LIMITING FACTORS IN WAGE RATES¹

AN economist attempting to consider social problems in a broad way needs always to remind himself of one of the idols of his craft. Predominantly concerned as he is with studying economic affairs, he is apt unconsciously to assign to these affairs an undue place in life. In fact economic welfare, however widely we interpret the term, is only a small part of welfare as a whole. The best things in life are not to be bought with or measured by money. Income is no test of happiness or of worth. These things I say to myself in my professional capacity, rather than to you; for that human values stand above and beyond the values of the market-place has always been recognised in the Copartnership Movement, and by none more fully than by him with whose memory the lecture that I am to give to-day is associated.

Though, however, all this is so, it is none the less true that economic conditions have upon general welfare a very intimate and a very important bearing. It is not merely that a substantial part of the satisfactions of an ordinary man's life are directly associated with things and services that he buys for money. There is, over and above this, the fact that, unless certain minimum conditions of economic well-being are provided for, the higher non-economic goods are in a great part shut away. If a man, to obtain a bare subsistence, must spend, say, twelve hours of strenuous labour every day, what energy can be left him to appreciate Nature, or Literature, or Art? If a family's income is so straitened that they are forced to

¹ The Aneurin Williams Memorial Lecture given to the Third London Copartnership Congress, 1926.

live huddled together in overcrowded rooms, how is it possible for the finer flowers of family life to come to bloom? I grant that, if we wish to compare three families with incomes, one of £1,000, another of £2,000, another of £4,000, this class of consideration does not matter much. None of the three is threatened with extreme privation; it may well be that the £1,000 family leads as good and full a life as the £4,000 one. But, if the incomes of our three families are £100, £200, and £400, this is no longer true. The gap between £100 and £400 is different in kind from that between £1,000 and £4,000: on the one side of it is darkness unrelieved; on the other the rising sun. This is one of the reasons why the incomes of manual wage-earners have always been of especial interest to economists; they are small incomes, and, therefore, changes in them have a much more important effect on total welfare than equal changes, or even equal proportionate changes, in the incomes of more fortunate persons. A second reason, of course, is that manual wage-earners and their families constitute the main part of the population; and, obviously, the well-being of a large number of people weighs more in our scale of values than the well-being of a few.

I propose then to put before you some considerations—they are not, I am afraid, in any way new—concerning the incomes of manual wage-earners. That these incomes have increased greatly during what may perhaps be called the modern period is well known. Sir Josiah Stamp, for example, is fond of saying that “the ordinary person of to-day is four times as well off in real commodities as the person in the corresponding stage in the scale in the beginning of the nineteenth century,” 125 years ago; and wage index-numbers show that since 1850 real wages have increased 75 per cent. Though, however, there has been improvement, everybody is agreed that further improvement is greatly to be desired; and my purpose is to ask by what factors the possibility of this is determined and constrained.

In this inquiry we may, I suggest, make best progress

by thinking away at the start the whole apparatus of money, in terms of which the real transactions of modern civilised communities are carried through. For, after all, money in itself is nothing. To learn that a man's income or wages is so much money tells us nothing, until we know how much of actual things and services that amount of money will enable him to buy. I propose, therefore, that we go behind money and make for ourselves some such picture as this. Every year the brain workers and the hand workers of the country, with the help of the capital equipment, the machinery and factories made by man, and the land and minerals provided by Nature, call into being a certain aggregate mass—a heap, if you like to use Sir Josiah Stamp's word—of services and things. The heap so made in any year—of course I am speaking in the broadest possible terms and omitting all secondary matters—constitutes the real income of the whole country during the year. Out of it come the real wages of manual workers, the real salaries of brain workers, interest, profit, rents. Hence the aggregate amount of real wages available to manual workers, and so the wages level, is limited immediately by two factors, the amount of stuff that is taken out of this heap by people other than manual workers and the original size of the whole heap; and the only means by which it is possible for the aggregate amount of real wages to be raised are, first, a transfer to them from the portion of the existing heap that now goes to other people, and secondly, an increase in the size of the whole heap. Plainly there is no other way.

It is very widely believed by people who have given no special study to these matters that the heap, as a whole, is amply large enough for all reasonable needs, but that the main part of it is frittered away in luxurious living by fortunate idlers who draw from it enormous unearned incomes. In other words, it is believed that the root cause of low wages is bad distribution of the national income; and that, if only that distribution was altered, the real wages of manual workers could be multiplied many times. Costly frivolities reported in the newspapers,

high-power motor-cars visible on the streets, give colour to this opinion. It is as natural as it is widespread. But a cold view of statistics does not support it. Though, as compared with the year's income of *any single* ordinary man, the luxury expenditure of certain types of very rich persons is enormous, as compared with the aggregate income of *all* ordinary men the aggregate luxury expenditure of all very rich people together is small. The reason is, of course, that the number of very rich people, reckoned as a percentage of the total population, is extremely small. A careful study has been made of this matter by Dr. A. L. Bowley for the period immediately preceding the war. Owing to the large and rapid movement in the value of money that was occurring until quite recently, it has unfortunately not been possible as yet to carry through a comparable study for the present day. But there is no reason to suppose that the broad outlines of the picture are different now from what they were in 1911. In that year about one-half of the aggregate real income of the country went to persons with incomes under £160 a year—roughly £3 a week—mostly wage-earners. Of the remainder, a large part—more than half—was used up in taxes for public purposes and in creating new capital instruments. If we take account of this, and if we suppose the present recipients of these incomes to be still allowed for their own use a sum per head equal to the average rate of wages, there would only be left over available for transfer from them to manual workers sufficient income to raise the average rate of real wages by some 25 per cent. This assumes that the transfer could be made without causing in the process—directly or indirectly—any diminution of aggregate real income; and, of course, in fact it would inevitably cause an enormous diminution. When account is taken of that, we are, in my judgment, forced to the conclusion that bad distribution is not a main factor in keeping down the earnings of manual workers; and that by no possible method of doctoring distribution could the average level of real wages be increased by more than a few shillings per week.

I do not wish to be misunderstood on this matter. It is far from my intention to suggest that the present distribution of wealth is a thing to contemplate with satisfaction, or that, because such a sum as £100,000, if spread among all the wage-earners of the country, would have no visible effect, therefore a rich man who squanders £100,000 in riotous living is guiltless towards his fellow-men. On the contrary, the fact that the aggregate heap of real income is so small makes any waste of it more blameworthy, not less. Nor again do I wish to imply that there is *no* scope through Government action for further transfers for social services designed to benefit the poor, over and above the large transfers that are already being made. My argument up to this point is concerned, not with ethics or politics, but with statistics. It is directed against the popular idea that our national income of real things is ample for all reasonable needs, and that economic prosperity could be assured for the whole community by the simple process of confiscating the superfluities of the idle rich. The heap of goods and services by which we all live is not ample. Even now it is distressingly small relatively to the population which it has to support. As Dr. Bowley wrote in 1919: "The wealth of the country, however divided, was insufficient before the war for a general high standard; there is nothing as yet to show that it will be greater in the future."¹

Therefore I turn away from distribution to production; to consider the factors by which the size of the annual heap of income is determined. In doing this I am met at once by a complication. It is evident that one of the things upon which the size of the heap depends is the number of people engaged at work in producing it. Other things being equal, an increase in the size of the population is a cause expanding the heap and making possible an increase in the aggregate amount of real wages. But this is not the only way in which the size of the heap and the numbers of the population are connected together. Not only is a growth in population

¹ *The Division of the Product of Industry*, p. 58.

likely to cause a growth in the heap ; but also a growth in the heap is likely to cause a growth in population. As man's command over Nature extends, he is able to take out his gains either in the form of more real income per head for the same number of people, or in the form of the same income per head for a larger number of people, or in some manner intermediate between the two. Here we are in contact with large issues about population, which I could not discuss here without upsetting altogether the balance of this lecture. Therefore I propose, if you will allow me, to leave these issues on one side ; to proceed on the assumption that, for the purposes of this limited discussion, population changes may be ignored.

First, then, among the factors on which the size of the heap at any time depends I place scientific knowledge. This it is that enables man to harness the forces of Nature to his service. It has transformed, and is transforming the face of the world. We have merely to reflect that 100 years ago not one of the dominant modern means of communication existed ; there were no railways, no steam ships, no electric trams, no motor omnibuses, no aeroplanes, no telegraphs, no telephones, no wireless. All these things are due to scientific knowledge ; and innumerable other things in other spheres. Nor does science stand still. It is continually advancing, continually enabling a given number of people with a given amount of effort to produce a larger and larger heap of real services and things. It would be rash to set a limit to what may be possible here. No man, for example, can be certain that there will not some day be discovered a means of releasing and controlling the stupendous energies that are stored inside the atom. Should this be done mankind will become possessed of powers utterly beyond the reach of our present imaginings ; powers which they may, indeed, devote in war to mutual annihilation, but which there is at least a hope may serve a better end.

A second factor is capital equipment. Plainly the more fully the people are supplied with tools and appliances, machines, factory plant, railways, ships, and so on,

the more goods and services a given number of them will be able to produce. I am not now concerned with questions about the way in which capital equipment is owned; whether in the present manner or chiefly by the State or chiefly by associations of wage-earners. Whatever the method of ownership may be, it is plain that every growth in the quantity and improvement in the quality of capital equipment enables the heap of services and goods at our disposal to expand. Moreover—and this is a very important point—it is proper to include in capital equipment from this point of view the trained capacities of workpeople. Sometimes I have heard it said that the productive powers of the community are lessened when resources, which might have been devoted to creating new material capital, are turned instead into social services. I answer that it is possible to increase productive power by educating and training a man no less than by building a steam engine; by restoring to health a worker who is sick no less than by repairing a machine. Human capacities are, indeed, ends in themselves in a way that material instruments are not; in this sense they transcend productive capital; but they are also included in it.

A third factor is the length of time that people are willing to work. It has, of course, long been known in a general way, and experience gained in the war has made this knowledge more precise, that, after a certain critical point has been reached, additional hours of work do not in the long run lead to additional output. Naturally the length of working day that is most productive varies in different occupations and with different classes of workers; but for all there is a limit. To pass that limit is wasteful from every point of view. Until that limit is reached, however, more hours of work do mean more output. Consequently a choice must be made. It is open to us to have a larger heap with less leisure to enjoy it, or a smaller heap with more leisure. When the heap becomes smaller because leisure is preferred, that need not be cause for regret. A reduction in the heap so

about is a very ^{major} profit-shar[er] from a reduction
 in which ^{factor} about to cau[se] eling, and has proved herself
 together next and last he[re]. And, if ^{work; a} which I shall allude is
 organisation—the way[ward] of ^{the} various agencies of
 production are fitted ^{of} eve[ry] and combined for their
 common task. This is a large subject and one about
 which there has been much controversy. Everybody
 agrees that the substitution of a better scheme of organisa-
 tion for a worse one would enlarge our annual heap of
 goods and services. Most people agree too that different
 forms of organisation are applicable to different sorts of
 industrial activity. But there is much disagreement as
 to the appropriate range over which one or other form
 —private enterprise, co-operative production, labour co-
 partnership, municipal enterprise, national undertakings
 —should be extended. I shall not, of course, as a mere
 incident in this very general lecture plunge into so large a
 controversy. Let me indicate rather the characteristics
 that are required in *any* good system of organisation, with-
 out venturing an opinion as to how far different existing
 systems enjoy them. These characteristics may be
 grouped under two heads. First, there is technical
 efficiency; the successive processes of production must
 be fitted together in such a way that neither gluts nor
 shortages occur at any stage between raw material and
 finished product; that the different parts of everything
 are made in suitable proportions—not, for example, ten
 times as many fuses as there are shells in which to fit
 them;—that the energies of the country are distributed
 between different sorts of things in such a way that people
 find in the shops things they want now, not things they
 did want five years ago. Secondly, there is what I
 propose to call human efficiency. The right men must
 be put in the right jobs; those with executive ability in
 executive posts, those with technical skill in occupations
 where that skill can be used. Moreover, the methods
 of remuneration must be such that each man is encouraged
 to do his best; that his initiative is stimulated; that, if

constructive ideas. If services a given productive process occur to him, he shall have a way in which, so far as may be, the relations between present market persons engaged in industry must be of such a nature that friction is eliminated. In my ideal state, however, it would be as unthinkable as it is unthinkable now that a football team should scratch one of its matches on account of a quarrel between the captain and the goalkeeper. These two things, technical efficiency and human efficiency, are the characteristics of any good form of industrial organisation. They are the things which we should look for in deciding how many marks to give to any particular form. Plainly every improvement in this respect will help the aggregate heap of our national income to expand.

What I have said so far has been in the main descriptive. I have suggested that, though welfare as a whole is a much wider thing than economic welfare, yet the welfare as a whole of any modern community depends in an important degree on the economic welfare of the wage-earning classes in it. This in turn depends on the size of the aggregate heap of wealth constituting the nation's income and upon the way in which that is shared out between wage-earners and others. I have shown that the heap, relatively to the numbers of the population, is so small that no possible doctoring of distribution could provide a really high standard of living for everybody unless the heap itself is enlarged; and I have called attention to certain important factors upon which the size of the heap depends. Can we, from these generalisations, devise any guidance for the search in which men of good-will are always engaged for wise methods of social reform? I think it is possible to lay down a principle of some importance. The principle is this. Since the heap of our national wealth is already dangerously small, a sharp distinction should be drawn between policies for bettering the fortunes of wage-earners that do, and policies that do not, involve cutting down the aggregate size of that heap still further. Policies of the

former sort do it in the main profit-sharing and condemned; but they are open to the objection of being, and still of proof is on their advocates. It is not to be taken as work; all other sort may be welcomed unreservedly. Where? And, if you wish to illustrate this distinction.

When any group of employers exercises control over the supply of something for which the demand is very urgent, that group has the power to increase the aggregate real earnings coming to itself by deliberately restricting the output of the services it renders. Monopolistic combines of capitalists can do this; so also can monopolistic combines of workpeople in certain industries. Restriction of output, however accomplished, whether by a policy of "ca' canny" or in any other way, may, if conditions are favourable, benefit the workers for a time, perhaps permanently, the group which adopts it. But it can only do this at the cost of cutting down the size of the national real income, with certain damage to the rest of the community as a whole, with probable damage to the manual labouring class. It is conceivable that policies of this kind, as temporary remedies for very peculiar conditions, may be defensible; but, speaking broadly and generally, they are altogether anti-social.

This, I think, would be generally agreed. But what I have said about it leads on to a more intricate and disputable issue. This has to do with the claim for what is generally called the living wage, that is to say, a wage the amount of which is determined by our judgment of the minimum requirements of a satisfactory existence, without direct reference to the demand for labour. A living wage so conceived stands in contrast to what I shall call an *economic wage*. By this I mean a wage-rate, or rather a system of wage-rates (adjusted to one another in accordance with the relative amount of skill and training required in different occupations), such that, allowance being made for ups and downs and for workpeople in movement between jobs, all able-bodied workers desiring work are able to find it. If, in pursuit of the ideal of a living wage, we put the actual level of wages above the

economic level, and services a give oductive restricted and output is cut do' ha. I am not nity andmake this point clear, take the s. way in which, so. Suppose that farmers paid wages, a present ma per wheat. Plainly at any given rate of wh. iations of v fric'er will only engage such a number of me. his my' wo man's labour adds to his total wheat product as at a f as the wage that he has to pay him. Every push up of the wage means, other things remaining the same, a reduction in the number of men that he employs, and so a reduction in the aggregate output of wheat. The same thing is true of wages in general. If the percentage of unemployment stands, over a considerable period, substantially above 3 or 4 per cent., there is a strong presumption that the general level of wages, not necessarily, of course, the level in all individual industries, has been put above the economic level. That presumption is, in my judgment, warranted at the present time. I believe that the abnormal amount of unemployment which has prevailed during recent years is, not of course wholly but in part, the price which the workers have to pay for maintaining the average rate of real wages—the commodity value of wages so to speak—more or less at the pre-war level, in spite of the enormous destruction and dislocation resulting from the war. I do not say dogmatically that they are wrong to pay that price. Maybe it is better that unemployment should be high, that society should be poorer for the loss of work not done, that wage-earners as a body should lose the wages which the unemployed might have earned, than that rates of real wages should be cut, on the average, below the pre-war level. It may be that this is so; but the burden of proof, in my judgment, is on those who assert it, not on those who deny it. On the face of things it is a paradox that, after the enormous losses of the war, rates of real wages have *not* on the average fallen below the pre-war level in this country; it is not an undiscussible axiom that they ought not so to fall. If they are held up, it is right to recognise that the price of holding them is a heavy one, borne in part, indeed, by

other classes, but in the main profit-sharing wage-earners themselves.

I am anxious not to be understood as being against that conception of a living wage. When you say against that conception, the conception of Labour wage, I do not, of course, imply that of exercising industry if you leave things to the free members of the market, wage-rates will automatically become what they ought to be. They may easily become given a field the sense of being *less* than the economic wage, is provided well be that in certain circumstances better modern industry so react on efficiency through a experience of it, worth only low pay may become, through a experience of it, worth high pay. Advocacy of the economic wage in contrast to the living wage does not, therefore, imply advocacy of individualistic *laissez faire*. Nor does it imply readiness to tolerate the existence in a land of conditions of life unfit for human beings. I would not merely silence the slogan a *living wage*; I would substitute the slogan *living conditions*. To press the doctrine of the living wage is, as I have suggested, dangerous, because it through heavy unemployment. But, besides being a dangerous a living wage policy is also an ineffective means of social advance. For, while it may raise the needs of a man with a family up to the average, it will not meet those of the many families whose size exceeds the average. Nor will it meet the needs of a family when unemployment or sickness comes upon them. For my own part, therefore, I should, apart from certain exceptional cases, be chary of attempting to force rates of wages above the level which the current industrial circumstances, in conjunction with the number of wage-earners seeking employment, tend to bring about. But I should *not* be chary of strong action to ensure that, whatever wage a man is receiving, he and his wife, and more especially his children attain, through the expenditure of public funds if need be, a minimum of *living conditions*; a minimum that will at the same time assure to them a tolerable life and enable them to play their part in contributing to the economic welfare of the

country. The services a man can do, as it seems to me, is at once safer and more valuable than the other.

Here we have a principle that I set out a little while ago, the present resumption in favour of policies for betterment of manual workers that do not involve cutting down the aggregate sum of our national heap. It is agreed that taxes assessed upon income, a reduction of estates passing at death do not directly check production. It is also agreed that a reduction of estates passing at death does not check production indirectly by lessening the inducement now offered to work and saving; but the extent of the check is uncertain. My own view is that large sums can be raised by this kind of taxation without the check to production becoming serious. Let us, for the sake of argument, provisionally adopt this view. What follows? It follows that the State has the power to raise large amounts of money from relatively well-to-do persons without causing the national heap of real income to contract seriously. Suppose then that it uses resources so raised to build up human capital, to educate and, if necessary, to feed children in the plastic period of their lives; to combat such potent causes of disease as overcrowded and insanitary houses; to cure, so far as may be, sickness in its early stages; to ensure that temporary failure to find work shall not destroy forever the skill or the morale of those unfortunate enough to suffer from it. Expenditure in these ways may be expected to yield in the end a large return in productive power, so that in the net result—I say nothing of non-economic gains—the size of the national heap, so far from being cut down, is substantially expanded. There is no element of loss to set against that gain.

Let me add one word that is appropriate to this occasion. Among the policies for bettering the fortunes of manual wage-earners, which may be expected to expand the aggregate heap of our national income, a high place is held by labour copartnership. That system even in

its elementary form of mere profit-sharing, smooths out friction, promotes good feeling, and stimulates wage-earners to an interest in their work; all which things make for enhanced production. And, if you take a longer view and consider those forms of Labour Copartnership in which a real opportunity of exercising control in industry is accorded to members of the wage-earning class, there is a further great gain. The fund of higher ability latent in that class is given a field of practice and a ladder of advance. A way is provided by which that great waste product of modern industry, as Professor Marshall used to call it, the unused powers of men in humble circumstances, is saved from being a waste product and is called to the service of man.

This concludes what I have to say. I was told that this lecture some aspect of social affairs should be treated in a philosophic and general way. In reading over what I have written I fear that the philosophy and morality has been carried so far that unkind critics might dub the result a platitude. I ask your forgiveness if that is so; and I thank you for the privilege you have allowed me of opening a series of lectures designed to commemorate a man notable for social enthusiasm and ardent public spirit.

III

STABILISATION IN PARTICULAR INDUSTRIES¹

§ 1. IN this paper I am concerned with particular industries, and, to simplify the argument, I assume that the *general* level of prices is somehow kept fairly steady. In recent discussions about associations of producers, mergers and so on, reference has frequently been made to the power of these organisations to introduce stability into business and to the economic advantages which may be expected to result from this. I am not aware that these claims have as yet been fully analysed, though in an article in *Economica* in June 1926 a valuable study of some aspects of them was made by Mr. Lavington. In the following paragraphs I shall attempt to carry the matter somewhat further. I am not concerned with the question whether these organisations are likely in fact to regulate their conduct with an exclusive view to the public good. I ask only what it is in their power to accomplish in the way of socially advantageous stabilisation, *if they do this*. For the purpose of my analysis I shall assume that the happenings of all years are equally important, comparing them together at their full value, so to speak, without any discounting for date. This is legitimate and, indeed, necessary in a general study, because it is purely arbitrary whether we conceive ourselves as starting with a downward or an upward fluctuation.

§ 2. Let us begin by supposing that the conditions of demand and the physical and technical conditions affecting production are both constant. Then at first sight it would seem that production, consumption and price will

¹ Archiv für Sozialwissenschaft und Sozialpolitik, 1927.

all be stable in any event, and that, consequently, associations of producers can effect no improvement in any of these respects. This, however, is not always so. Even though demand and the physical and technical conditions of production are constant, certain sorts of instability may still prevail. If there are a large number of competing producers, aggregate output and, therefore, also aggregate consumption and price will, indeed, be constant. But the outputs of the individual producing concerns are, nevertheless, liable to vary, orders being concentrated now on some, now on others. The establishment of a producers' association may be expected to mitigate this internal instability and to give the representative producer, as well as producers in the aggregate, a steady output. Now, when a concern produces a constant output of A units per year, its costs are bound to be less than when it produces $(A + a)$ units one year and $(A - a)$ the next; for in the latter case it must have a capital equipment sufficient to yield $(A + a)$ units, part of which is idle in bad years. That this is an important matter is illustrated by the eagerness of co-operative societies—creameries and so on—and shipping conferences to assure themselves of the "loyalty" of their members, with a view to making possible a steady output of their services.¹ Hence it would seem that associations of producers have the power, by eliminating internal instability, to reduce costs, and so to increase production and consumption, with obvious advantage to economic welfare. On the other side, however, it must be observed that this kind of stabilisation, by checking competition among producers, hinders the supersession of the less by

¹ The argument of the text, it will be noticed, while it proves that costs will be reduced if, other things being equal, a stable aggregate demand is met by stable production on the part of individual producers, does not enable us to decide in what way the unstable part of aggregate demand, if such exists, is most economically distributed: whether, for example, with ten producers and an aggregate demand varying from 100 to 110 (10 per cent.) it is better that the output of each producer should vary from 10–11, or that the output of nine should be constant and that of the tenth vary from 10–20.

the more competent, and so tends to lower the average standard. This indirect injury may outweigh the direct benefits; so that, on the whole, costs may be higher, and production and consumption smaller, than they would have been had no producers' association been formed. The balance will tip in different ways according to the detailed circumstances of each case.

§ 3. In the preceding paragraph I postulated an industry made up of a large number of competing producers. Some industries, however, comprise only a small number of such producers, so that each of them has some measure of monopoly power. In such industries we have to do, not with simple competition, but with multiple monopoly, and aggregate output, together with consumption and price, is indeterminate and unstable. Each rival monopolist, ignorant of what the others are going to do, will seek profit, now by enlarging, now by contracting his scale of production. If any of them thinks it possible to kill off his rivals and secure the whole market by selling deliberately at a loss for a time, the range of variation in aggregate output will be still larger. Examples are afforded by the freight wars of rival railway and shipping concerns and the price wars of the tobacco and other industries. The instability of output, consumption and price that result from these conditions is plainly anti-social. When competing monopolists come together, the association which results has opportunity and power to ensure stability in all these respects in a way conducive to economic welfare. That it has also opportunity and power to injure society by restricting production and exacting abnormal profits for the services it renders is not relevant to this study.

§ 4. What has been said so far is fairly obvious. More difficult issues arise, however, when either the physical conditions affecting supply or the public demand is not constant. The former sort of variation is best illustrated in agriculture. There Nature gives to man widely different amounts of help in different years. The aggregate cost of producing a given total of A units over

a period of (say) ten years will, therefore, be less if the outputs are above the average in good, and below the average in bad, years, than if they are equal in all years. This can be seen most easily if we reduce our unit of time from a year to a month. It is obvious that the cost of producing 100 tons of strawberries in each month of a year would be enormously greater than the cost of producing 1,200 tons in the summer season. In like manner the cost of obtaining 30 bushels of wheat off an acre of land in every one of ten seasons, though, if the character of the successive seasons were known beforehand, it might be a possible achievement, would inevitably be much more costly than to obtain 30 bushels on the average of all ten seasons. On the other hand, the amount of satisfaction obtained by consumers from unequally distributed consumption will be less than that obtained from an equally distributed consumption of the same aggregate amount. An exactly parallel analysis holds good when the physical and technical conditions of supply are constant but the demand varies. On the one hand, the aggregate cost of producing a given output over a period of (say) ten years will be less if the outputs are equal in every year than if they are unequal. On the other hand, the aggregate amount of satisfaction obtained by consumers from an equally distributed consumption will be less than that obtained from a consumption of like aggregate amount distributed unequally in accordance with the variations of demand.

§ 5. When fluctuations of either of the two types just described take place, more particularly when demand fluctuates, the class of considerations set out in § 2 and § 3 are greatly reinforced. For even under true competitive conditions, much more under conditions of multiple monopoly, the presence of fluctuations enhances the difficulty which producers have in calculating their own advantage aright. Thus, when demand is seen to be expanding, each several producer is apt to focus his attention on this fact, and not to take proper account of the associated fact that the stimulus which he himself

is feeling will be felt also by his rivals. Every producer, to speak in exaggerated terms, looks for the whole of the new demand to come to his doors. Had he full information as to the expansion that is being undertaken by rivals and the orders that are being placed with them, he might not act so rashly. But in fact this kind of information is very scarce. Consequently in periods of expanding demand competing producers in the aggregate tend to overshoot the mark and in periods of contracting demand to fall short of it: and failure in these respects involves instability of price and instability of production, both of a kind injurious to economic welfare. An association of producers, being able to bring into focus all available information, would have the power to mitigate very substantially this sort of instability. Assuming that the association itself was stable—*i.e.* was not liable to frequent disruption through internal quarrels—and that it refrained from monopolistic exactions, it would in this respect have claims on the gratitude of society.

§ 6. I now turn from what may be called relative stabilisation among the various producers in an industry to stabilisation in respect of the industry as a whole. Let us begin with an industry in which physical and technical conditions are fixed, but for the product of which demand fluctuates. Let us assume further that the product is immediately perishable, so that there can be no question of making for stock, and that the demand for the current output of it at one time is independent of the amount purchased at any other time.¹ Let us further ignore all indirect effects of different output policies, and concentrate attention exclusively upon consumers' benefit and producers' cost as represented in their money expenditure. In these conditions it has been claimed by some writers—for example, Mr. Lavington—that

¹ This second condition is not, as might be perhaps supposed at first sight, a necessary consequence of the first; for the purchase of tobacco this year may, by altering my taste for it, cause my demand next year to be higher than it would have been otherwise; and, *per contra*, my participation in a tour of the world this year may lessen my desire for such a tour next year.

associations of producers can promote economic welfare through making production more stable than it would "naturally" be; by others that they can do this by making prices more stable. Plainly, however, to stabilise production in these conditions means, so to speak, destabilising prices, and to stabilise prices means destabilising production. There is thus a direct conflict to be resolved or compromised. The root cause of the conflict is that the cost per unit of producing certain commodities varies inversely both with the average scale of output and also with the extent to which output fluctuates from time to time about the average. Stabilisation of output always means diminished variability about the average: stabilisation of price sometimes means increased average scale of output. Thus a somewhat intricate problem is presented for analysis.

§ 7. Mr. Lavington shows that, when conditions of constant return prevail, that is to say, when the cost of production per unit does not depend in any way upon the average scale of output, there is a general tendency for competing producers confronted with a fluctuating demand to make their output more variable (which implies making their prices less variable) than the general interest requires. His argument is developed with the help of geometrical constructions, but there is not, I think, any need for these. It is sufficient to observe that, if a purchaser were to shift a unit of his demand from good times to bad, this action on his part would (by making production more steady) reduce costs of production and so price to all purchasers, but that he himself, as an individual, would reap only a very minute part of this social gain. Consequently, if he is left to himself and if he acts as an economic man, he will not shift his demand from good times to bad so far as it is in the general interest that he should do. A producer's association, by forcing price up in good times and down in bad, has the power, in effect, to tax him in good times and to pay him a bounty out of the proceeds in bad times, thus inducing a shift in his demand from good to bad times. At first

sight it seems that there *must* be some rates of (virtual) tax and bounty, the imposition of which in this way would increase economic welfare as a whole; just as, in accordance with the familiar analysis, there must be some rate of bounty on the production of increasing return commodities which (apart from administrative costs) must increase economic welfare. This appearance is, however, illusory. For in the familiar analysis the money to provide the bounty is assumed to be raised in ways that do not involve any consumer's loss over and above what is represented in this sum of money. In our present problem, however, the raising of the bounty money, in so far as it stops off consumption in good times, involves an extra element of consumers' loss. There is not, therefore, always scope for a socially advantageous stabilisation policy on the lines contemplated above. There is more likely to be scope for it the less elastic is the consumers' demand for the commodity in good times and the more elastic is their demand in bad times.

§ 8. Most practical men who speak of "stabilisation" mean by this stabilisation of prices (which implies destabilisation of production) in the face of fluctuating demand. They maintain that competition tends to bring about in bad times a slump of prices so great and consequential losses so heavy that the fear of these causes industrialists to keep the scale of their equipment unduly low. They concentrate attention on the fact that in certain industries the cost of production per unit will be lower, the larger is the scale of average output, and they argue that stabilisation of price would enable the scale to be enlarged. In studying this argument let us for the present suppose that we have to do with a commodity whose cost of production per unit does not depend in any way upon the extent to which output varies from time to time about the average. The argument is plainly not of general application. It only professes to apply to industries of increasing return, *i.e.* in which the average cost of production per unit is diminished by an increase

in the scale of equipment and output. Moreover, it only in fact applies to certain of these industries. For, if the demand in bad times has an elasticity greater than unity, to force up price above the competition level will cause a reduction in gross receipts, and may cause a reduction in net receipts (*i.e.* gross receipts *minus* prime costs). It is more likely to do this, the more elastic is the demand for the commodity and the less rapidly average (and marginal) prime costs decrease with decreases of output. Plainly it is impossible for a policy of forcing up prices in bad times to encourage producers to increase the scale of their plant—and so to win for society diminished average costs—where the conditions are such that this policy actually diminishes their net receipts in bad times. In conditions where the policy increases their net receipts in bad times, the case for price stabilisation is on all fours with the case for output stabilisation as set out in the preceding section. Competing producers left to themselves will not carry it so far as is socially desirable, and there is, therefore, a *prima facie* opportunity for producers' associations, by collecting (virtual) taxes in bad times and giving (virtual) bounties in good times out of the proceeds, to improve on the natural course of events. As before, however, they will not, in fact, be able to do this always. They are more likely to be able to do it the less elastic is the consumers' demand for the commodity in bad times and the more elastic it is in good times—*i.e.* in conditions converse to those contemplated in the preceding section.

§ 9. We have thus studied separately the cases in which (1) average costs per unit of output are lower the less the extent to which output varies about the average, and (2) average costs per unit are lower the larger is the average scale of output. In the former case there is *prima facie* ground for stabilising production in some degree; in the latter for stabilising prices in some degree—policies which are mutually incompatible with one another. When the conditions are such that average costs are lessened both by diminished variability of output

and by increased average scale of output, no general solution of the problem presented is possible. Two forces are pressing in opposite directions, and nothing can be said of the result without a knowledge of their comparative intensities. Plainly it is less likely in these conditions that there will be *any* scope for socially advantageous intervention by producers' associations than it would be if average costs depended on one of the above factors only.

§ 10. In the foregoing discussion I have tacitly assumed that producers are able correctly to foresee the sequence of good and bad times, and do not base their policy on exaggerated hopes or fears. In real life, however, it may well happen that in periods of depression producers fall into an exaggerated despair about future prospects, reckon that the tide will never turn, and, consequently, are tempted to allow their plant to deteriorate—to blow out blast furnaces, let mines become flooded, let rubber plantations suffer from various sorts of ravage and so on—to a degree that the true facts of the situation do not justify. In other words, they may be tempted to spare themselves costs of upkeep in bad times in such a way that, when good times come again, very much greater costs have to be incurred to make good their neglect. Plainly such conduct is injurious to aggregate economic welfare. If in bad times the demand is inelastic, restriction of output then may, by lessening producers' losses, also mitigate this unwarrantable element of pessimism in their outlook, so may obviate the above results, and so indirectly augment aggregate economic welfare. In order that this should happen, it is *not* necessary, as it was in the conditions contemplated in the preceding section, for output to conform to the conditions of increasing return as there defined. Plainly there is here a new argument in favour of producers' associations that aim at stabilising prices (and so destabilising production). But, since it depends on the vagaries of producers' psychology, there are no means of gauging its quantitative importance.

§ 11. Let us next bring into account those indirect effects of different output policies which in § 6 were provisionally ruled out. There are two principal effects of this class. First, relative stability of *price* carries with it to all concerned relative *certainty* about future prices. If a trader or manufacturer of finished goods can calculate with confidence what price is likely to rule in the future for his materials, he will escape the need of insuring against uncertainty, and so will have lower costs, which will be reflected in the final price of what he sells. This is a social benefit, but not a benefit for the producer of the materials. Secondly, relative stability of production reduces the extent to which employment fluctuates and, therefore, indirectly the average volume of unemployment. This is obviously a social benefit, whether or not it is reflected in a reduction of the charges which the rest of the community have to bear for the relief of the unemployed; but it is not, except in a very remote and indirect way, a gain to competing employers. When account is taken of the former of these two indirect effects, the case for price stabilisation is strengthened: when account is taken of the latter the case for production stabilisation is strengthened. There can, I think, be little doubt that the latter effect is the more important of the two.

§ 12. Finally, still neglecting other forms of interdependence between the demands of different times, which, for our present purpose, are unimportant, let us remove the assumption that the commodities under review are immediately perishable. The way is then open for the device of making for stock. It is evident that, when this device is practicable, economic welfare as a whole will be furthered by adopting it in a certain measure: by collecting produce into stock in years of good supply, when Nature is especially kind, and in years of bad demand, and selling it out of stock in years of bad supply and good demand. The extent to which it is desirable in the general interest that making for stock should be carried is, of course, different in different conditions. The process involves the cost of holding a certain average of stock idle

and further costs for housing, wastage and so on, which vary with the bulk of the commodity relatively to its value, with its liability to physical decay, liability to fall out of fashion, and so on. The lower these costs are, the further it is desirable that the process should be carried. When supply conditions are constant and demand varies, it promotes stability of production and of price, together with instability of consumption adjusted to the instability of needs. Thus there is here no conflict between price stabilisation and production stabilisation; but a common policy promotes both. This policy is not likely to be carried by the self-interest of competing producers so far as is socially desirable; because these producers, as individuals, do not find reflected in their private gains any appreciable part of the indirect effects which it brings about in lowering costs of production (through the two sorts of stabilisation), diminishing the uncertainty of price-forecasting and diminishing the volume of unemployment. Here, therefore, associations of producers, if they choose, have the power to benefit society. A similar benefit could be conferred by a public authority which purchased for stock from producers in times of low public demand and sold out of stock to the public in times of better demand, and which carried this activity somewhat beyond the point where conditions of profit, taken by themselves, would call a halt.

IV

DISTURBANCES OF EQUILIBRIUM IN INTERNATIONAL TRADE ¹

1. THERE are two quantities that play a central part in the trade between nations, say between England and the rest of the world, to be called here Otherland. These are (1) the *rate of exchange* between English money and Otherland money, which we may express by the number of £s sterling that exchange against one dollar; (2) the *real ratio of interchange* between English stuff and Otherland stuff, which we may express by the number of units of some representative commodity made exclusively of English labour and materials which will exchange for one unit of some representative Otherland commodity made exclusively of Otherland labour and materials.

2. There are two sorts of equilibrium that are relevant to the trade relations of England and Otherland: exchange equilibrium and full equilibrium. Exchange equilibrium exists if the sterling price of anything that enters into trade, the dollar price, and the rate of exchange between sterling and dollars are so adjusted that—cost of carriage being ignored—there is no opening for profit by buying anything for sterling, selling it for dollars, and converting the dollars into sterling, or by buying anything for dollars and proceeding analogously. Full equilibrium exists if *also* (1) in each country the numbers of workers of given quality are so distributed over different occupations that a common wage-rate rules everywhere, and (2) this rate is so related to the conditions of aggregate demand and supply that in the sum-total of all occupations employment is available for all would-be workers.

¹ *Economic Journal*, September 1929.

3. Let us suppose ourselves to start with a state of affairs in which full equilibrium rules. Such a state is, of course, always liable to be modified by temporary "accidents." We are not, however, here concerned with these. Apart altogether from them there may also on occasions supervene what may be called *once-for-all* changes, that is to say, changes that maintain themselves from year to year and are not merely temporary. When a change of this type is superimposed upon a previously existing state of full equilibrium, the conditions may or may not be such as to admit of a new state of full equilibrium emerging. In other words, the postulated new arrangement may or may not be one that is capable of being maintained. This proposition, which is well illustrated by the problem of German reparation payments, may be developed into a twofold study embracing respectively (1) the conditions in which a breakdown must occur, and (2) the form in which a breakdown, if it occurs, will manifest in various circumstances. I shall examine these matters, first as they would appear in a barter economy, and secondly in modern money dress; it being premised, for the purposes of this discussion, that the reparations-paying country is not free to cover its reparation debts by new borrowings abroad or by drawing upon resources which otherwise its citizens would have invested abroad.

4. Under a barter economy Y's government may be obligated to hand annually to W's government either R units of linen (made in Y) or K units of cloth (made in W). If the obligation is in terms of linen, it can or cannot be fulfilled according as Y's government can or cannot raise annually from its citizens as much as R units of linen. Whether it can or cannot do this depends *prima facie*¹ entirely on conditions internal to Y. If the obligation is in terms of cloth, it can or cannot be fulfilled according as Y's government can or cannot raise annually from its citizens enough linen to purchase in the market K units of cloth. This depends partly on how

¹ But cf. *post*, § 6.

much linen Y's government can raise annually from its citizens—as before, a purely internal matter—and partly on how much cloth a unit of linen will purchase when Y's government is attempting, by sales of linen, to buy given quantities of cloth.

5. It will clarify our ideas to set out in symbols the principal relevant quantities. Let B be the maximum quantity of linen that it is feasible for Y's government to raise annually from its citizens for reparation purposes. This quantity depends partly on the size and distribution of the national real income in Y; partly on the efficiency of its tax technique; partly on the attitude of mind of potential tax-payers, both generally and in relation to the justice of the reparation claims; and partly on the amount of revenue that the government is raising for various forms of real expenditure and for transfer expenditure. Let $\phi(l)$ be the quantity of cloth that l units of linen exported from Y avail to purchase. If then the stipulated annuity is R units of linen, it can be paid provided that $B > R$. If the annuity is K units of cloth it can be paid provided that there is any value of l between B and 0 in respect of which $\phi(l) > K$. It is necessary to state the conditions thus, instead of postulating simply that $\phi(B) > K$, because the nature of W's demand for linen may be such that, while B units of linen would not avail to buy K units of cloth, some quantity of linen less than B would avail to do this. If conditions of that sort prevail, Y's government may need, in order to fulfil its reparation obligations, to forbid all export of linen on private account and itself to sell abroad a quantity deliberately restricted with a view to securing a high price in terms of cloth. This, however, is an exceptional and improbable state of things—so long, at least, as we are considering Y's exports in general and not particular exports—and need not be studied further.

6. If, apart from reparations, there is no trade at all between Y and W (the rest of the world), it is plain that the maximum annuity payable in linen, which Y's government can raise and hand direct to W's govern-

ment, is the same whatever tariff policy W adopts. The maximum annuity payable in cloth is not thus independent of W's tariff policy; for, if W imposes duties upon imports from Y, the demand in terms of cloth of W's citizens for linen will be diminished, and, in order to obtain a given quantity of cloth, Y's government will have to provide a larger quantity of linen—the amount of the difference depending on the size of the duty and the form of W's demand for linen—than would otherwise have been necessary. If, apart from reparations, some trade would have taken place, this sharp antithesis no longer holds good. For import duties imposed by W will, in general, cause the citizens of Y to obtain, for a given amount of work, an income of things yielding them less satisfaction than the income of things they would have had if their exchange of linen against cloth had not been obstructed, and so will make the maximum levy in linen that their government can raise from them smaller than it would otherwise have been. But in this case, as in the last, import tariffs imposed by W will contract Y's capacity to pay much more seriously for cloth annuities than for linen annuities.

7. An annuity system expressed in linen breaks down if $R < B$, that is to say, if it proves impracticable for Y's government to collect from its citizens for payment abroad as much linen as the annuity requires. The breakdown manifests as a failure to solve Y's budget problem and cannot manifest in any other way. An annuity system expressed in cloth breaks down when there is no quantity of linen less than B that suffices to purchase K units of cloth in the market. If conditions are such that an advance beyond B in the quantity of linen offered would involve a nearer approach towards the acquisition of K units of cloth—whether or not there is any quantity of linen that would yield that quantity of cloth—the breakdown may again be said to manifest as a failure to solve Y's budget problem; but, if they are such that, in the neighbourhood of B, an increase in the linen offered involves a decrease in the cloth acquired

—provided, of course, that there is no quantity of linen less than B that will yield K units of cloth—the breakdown is more properly described as a failure to solve Y's transfer problem.

8. Under a money economy the reparations annuity will no longer be expressed in real terms, but in money terms: either as so much, say, German money (marks) or as so much foreign money (sterling). Plainly an obligation expressed in either of these forms may have any number of different real meanings according to what the purchasing power of marks in terms of linen, or of sterling in terms of cloth, may be. In order, therefore, to render our problem definite we must make some assumption about these purchasing powers. Let us suppose that the purchasing power of sterling in terms of cloth is fixed, so that a £ sterling may, for our purposes, be regarded as equivalent to a defined quantity of cloth.¹ As regards marks, three arrangements are possible. Under (1) no obligation is imposed on Germany as to the value at which it will hold the mark; under (2) Germany is obliged to keep the mark at a constant value in terms of linen; under (3) she is obliged to keep it at a constant value in terms of sterling. Reparations annuities expressed in marks have no meaning under arrangement (1), and will not, in fact, be arranged for, since Germany could render them worthless at will; under arrangement (2) they are equivalent to annuities expressed in linen; under arrangement (3) to annuities expressed in cloth. Under all three arrangements annuities expressed in sterling are equivalent to annuities expressed in cloth. Reparation terms equivalent to linen and cloth annuities respectively break down precisely where reparation terms embracing actual linen and cloth annuities would break down.

9. If, under a money economy, the conditions are

¹ Under the Dawes plan the fact that this assumption may in practice fail was recognised in a provision which allowed for adjustment in the size of Germany's gold annuity should the real value of gold change substantially—a proviso not present in the Young plan.

such as to imply a breakdown, this may manifest in several different ways according to the form of the debt and the obligations governing German monetary policy. With a debt reckoned in marks, subject to the condition that the mark price of linen be kept constant, the breakdown can only appear as a failure on the part of the German Government to collect sufficient marks through taxes for delivery to Germany's creditors: there is, that is to say, a failure to solve the budget problem. With a debt reckoned either in marks or in sterling, subject to the condition that the mark-sterling exchange be kept constant—these two sorts of debt are, of course, precisely equivalent—a breakdown, if it occurs, must again appear as a failure on the part of the German Government to solve the budget problem—so long, of course, as the obligation to maintain the exchange is not violated. With a debt reckoned in sterling, subject to no obligation about exchange rates, or subject to an obligation in that matter which is violated, the breakdown may take a different form. The German Government is now free to obtain marks for reparations account *ad libitum* from the printing press, and thus, so far as money figures are concerned, is subject to no budget limit. This does not mean, however, that it is subject to no limit in respect of the real (linen) values which its money revenue represents. There is necessarily always a limit of this character. If the stipulated annuities involve a real levy that oversteps it, the breakdown manifests as a depreciation in the mark exchange, so rapid that no quantity of marks will suffice to buy the required quantity of sterling. That is to say, it manifests as a failure to solve the transfer problem.¹

¹ In so far as private German traders have sterling claims on foreigners, while foreign traders have mark claims on Germany—the two sorts of claims off-setting one another at the old exchange rate—the fall in the exchange creates a balance of sterling on Germany's private account which it may be possible for the Government to use for reparations. If both sets of claims are in the same currency no balance either way is created. If German traders' claims are in marks and foreign traders' claims on Germany in sterling, the fall in the exchange creates a debit in sterling

10. We now turn to consider more particularly once-for-all changes that are able to maintain themselves; in respect of which, that is to say, a breakdown does not occur. Such changes fall into two main groups according as they arise out of (1) enduring alterations in the supply of England's money or of Otherland's money, or (2) enduring alterations in the real demand of Englishmen (expressed in their stuff) for Otherland's stuff or alterations in the real demand of Otherland for English stuff. In the ultimate adjustment due to changes falling into the first group, it is clear that the real ratio of interchange between England's and Otherland's stuff will be unmodified. In those due to changes falling into the second group this ratio will be modified in general; but it will not be modified in the special case where both real demands alter and the alterations balance. Thus, if England demands more of Otherland's stuff and Otherland demands more of England's securities, and the relevant quantities are suitably adjusted, the real ratio of interchange between England's stuff and Otherland's stuff is unaltered in spite of the fact that the quantity of purchases and sales passing between them is increased.¹ It may perhaps be suggested that, in addition to the two types of once-for-all change distinguished above, there is a third type, namely, a decision by a government to force up the rate of exchange between its money and the monies of other countries in some defined proportion. Clearly, however, a mere decree by, say, the English Government that a unit of sterling shall exchange for 10 per cent. more dollars than before can accomplish

on her private account, so that to the difficulties of the State there are added further difficulties of individuals. Cf. Graham, "Self-Limiting and Self-Inflammatory Movements in Exchange Rates" (*Quart. Journ. of Economics*, February 1929, pp. 221 *et seq.*).

¹ It may be noted in this connection that the chief reason why the real ratio of interchange usually moves very little in the face of *short-period* swings in the respective demands of England and Otherland for material commodities is that securities and bankers' promises are used to swell the offer of the country whose supply of these commodities is temporarily contracted.

nothing. Measures must be taken to make the decree effective. It is these measures, not the mere decree, that are responsible for whatever happens; and a brief reflection shows that the only measures available consist in action designed to bring into play either factors that decrease the supply of sterling, or factors that increase the real ratio of interchange between English stuff and foreign stuff—by decreasing the demand for foreign stuff in terms of English stuff or by increasing the demand for English stuff in terms of foreign stuff—sets of factors that have already been taken into account.

11. At this point it may be well to insert a caution against possible misunderstandings. At first sight a careless reader may be tempted to suppose that a shift in the real ratio of interchange in favour of any country necessarily implies a gain to that country, and a converse shift a loss. This is not so. The real ratio of interchange will be turned in a country's favour if, other things being equal, its demand for foreign goods falls off. If the cause of this change is improved capacity to make for itself the goods that it used to import, the country's position will be improved. But, if the cause is worsened capacity to make the goods that it used to export, its position will be worsened; unless, indeed, the foreign demand for these goods is so inelastic that a reduced sending of them abroad evokes in payment an increased (absolute) quantity of imports. If the cause of the fall in our country's demand for imports is a diminished desire on its part for these goods, unaccompanied by any other change, the effects on the quantities of exports and imports will be the same as in the preceding case, but, since the satisfaction yielded by a given quantity of imports will be smaller, the prospect of the country's position being, on the whole, improved will be less good. When the real ratio of interchange is turned in a country's favour, not through a decline in its demand for foreign goods, but through an expansion, whether due to altered productive efficiency or to altered desire, in the foreign demand for its goods, the position

of the country, regarded as a single homogeneous unit, is necessarily improved. But, should its demand for foreign goods have an elasticity less than unity, the enhanced foreign demand will cause the volume of its exports to contract; and, therefore, when account is taken of the fact that in real life countries are not homogeneous units, but are divided up into different industries between which mobility is very imperfect, it *may* happen that the disorganisation caused in the country's export industries will do it more harm, in a wide sense, than the cheapening of imports does it good.

12. When a once-for-all change of any of the sorts distinguished in section 10 has been superimposed upon a previously existing state of full equilibrium and its consequences have worked themselves out, a new state of full equilibrium (which, as we have seen, implies, as part of itself, a state of exchange equilibrium) will be established. To enable us to state the conditions implied in this equilibrium in a manageable form applicable equally whether the real ratio of interchange and the quantity of international trade are or are not altered, we must assume (1) that the law of constant costs rules in all English industries, so that a shifting of workers between them, within the range relevant to our problem, does not involve a change in the relative costs of producing their goods; and also (2) that, *if* a change in productive efficiency in England takes place, it is general to all English industries. These assumptions are not, of course, required when the disturbing cause is purely monetary, so that both the real ratio of interchange and the quantity of international trade are unaltered; but they are required to make possible, in a reasonably simple form, any generalised statement.

13. At any assigned interval after the disturbing cause has begun to operate let us write as follows:

- (1) the new sterling price of pure English export goods divided by the old = ${}^s p_e$;
- (2) the new dollar price of pure English export goods divided by the old = ${}^d p_e$;

- (3) the new sterling price of pure English import goods divided by the old = ${}^s p_i$;
- (4) the new dollar price of pure English import goods divided by the old = ${}^d p_i$;
- (5) the new sterling price of pure English home goods divided by the old = ${}^s p_h$;
- (6) the new sterling price of a mixed good made in England, comprising m units of pure home goods and n units of import goods, divided by the old = ${}^s p_m$;
- (7) the new sterling wage in export-making industries divided by the old = ${}^s w_e$;
- (8) the new sterling wage in pure home industries divided by the old = ${}^s w_h$;
- (9) the new rate of exchange (quantity of dollars purchased by a £) divided by the old = R ;
- (10) the new real rate of interchange (quantity of pure import goods purchased by a unit of pure English export goods) divided by the old = K ;
- (11) the new real rate of wage—to workers supposed to purchase pure home goods, pure import goods, and mixed goods (as defined under 6) in proportions a, b, c —divided by the old = W ;
- (12) the new marginal productivity of English labour (if there has been a general change in efficiency) divided by the old = E .

14. The conditions necessary to exchange equilibrium are then satisfied, provided that

$$R = \frac{{}^d p_e}{{}^s p_e} = \frac{{}^d p_i}{{}^s p_i};$$

and

$$K = \frac{{}^s p_e}{{}^s p_i} = \frac{{}^d p_e}{{}^d p_i}.$$

These equations, so far as England is concerned, reduce to

$${}^s p_e = \frac{1}{R} {}^d p_e \quad (I)$$

$${}^s p_i = \frac{{}^d p_e}{K} \quad (II)$$

When these conditions are satisfied, exchange equilibrium prevails.

15. In order that *full* equilibrium may prevail, the following further conditions, additional to the foregoing, must also be satisfied :

$${}^s p_h = {}^s p_e \dots \dots \dots (III)$$

$${}^s p_m = {}^s p_e \left\{ \frac{m + \frac{n}{K}}{m + n} \right\} \dots \dots \dots (IV)$$

$${}^s w_e = E {}^s p_e \dots \dots \dots (V)$$

$${}^s w_h = E {}^s p_h \dots \dots \dots (VI)$$

$$W = {}^s w_e \frac{a + b + c}{a {}^s p_h + b {}^s p_i + c {}^s p_m} = E \left\{ \frac{a + b + c}{a + \frac{b}{K} + c \cdot \frac{m + \frac{n}{K}}{m + n}} \right\} \quad (VII)$$

16. Where $K = 1$,
 condition (II) reduces to ${}^s p_i = {}^s p_e$,
 condition (IV) reduces to ${}^s p_m = {}^s p_e$,
 and condition (VII) reduces to $W = E$.

Where $E = 1$,
 condition (V) reduces to ${}^s w_e = {}^s p_e$,
 condition (VI) reduces to ${}^s w_h = {}^s p_h$,

condition (VII) reduces to $W = \left\{ \frac{a + b + c}{a + \frac{b}{K} + c \cdot \frac{m + \frac{n}{K}}{m + n}} \right\}$

Where both K and $E = 1$,
 condition (VII) reduces to $W = 1$.

17. Now, whatever the cause of disturbance may be, it is clear that the rate of exchange and the relative sterling and dollar prices of any goods that enter regularly into trade between England and Otherland must, in all ordinary circumstances, become so adjusted to one another in a very short time in such wise that no

special exchange profit or loss can be made by merchanting them. Apart from cost of carriage, the sterling price of any given batch of exports from, or imports to, England must, when converted into dollars, be equal to the dollar price of the same batch. This implies that, if we make up a batch of import goods and export goods mixed together, the sterling price of a dollar (*i.e.* the rate of exchange) cannot diverge appreciably from the sterling price of the batch divided by the dollar price of the batch. That is to say, the conditions of exchange equilibrium, namely,

$${}^s p_e = \frac{1}{R} \cdot {}^d p_e \quad (I)$$

$${}^s p_i = \frac{{}^s p_e}{K} \quad (II)$$

will very rapidly be satisfied. But the satisfaction of this condition does not imply the satisfaction of the other conditions necessary to full equilibrium. These are likely to be achieved much more slowly, for the reason that they may involve alterations in money rates of wages—which are notoriously subject to friction—or the shifting of workpeople between different occupations, or both these things together.¹ When these other

¹ The nature of these shifts, of course, varies with the nature of the change, if any, that has come about in the conditions of real reciprocal demand. Thus, concentrating upon the effects produced in England, we must distinguish between (1) a rise in England's real demand for Otherland's stuff consequent upon an increase in England's desire for that stuff; (2) a similar rise consequent upon an increase in England's efficiency in producing export goods; and (3) a fall in Otherland's real demand for English stuff, no matter how caused. The adjustment, which the new full equilibrium requires in respect of the quantity of England's exports, the quantity of her imports, and the number of her workpeople engaged in making exports, will be different according to which of the above types of change has occurred, and also according to the form of the two reciprocal demand schedules. If the foreign demand for England's exports has fallen off, in the new equilibrium there will, *in general*, be fewer workpeople than before in the export trades of England; and, if the foreign demand has expanded, more workpeople. In the special case in which England's real demand for Otherland's stuff has an elasticity less than

conditions are known to be satisfied, we may fairly presume that conditions proper to a new exchange equilibrium are also satisfied; but it is not legitimate to infer from the presence of exchange equilibrium that full equilibrium is established. The practical moral is that, when the so-called purchasing power parity analysis is used to test the claim that the full effects of a monetary disturbing cause have worked themselves out, we must not employ price indices confined to traded goods. Ideally, traded goods ought not to be admitted in any degree either directly or indirectly (through goods which embody traded materials) into the indices employed. This is, of course, impracticable. It is not, however, impracticable to employ price indices in which traded goods play relatively a small part, *e.g.* indices of retail prices embodying the wages of retailers in addition to wholesale prices. In so far as traded goods do enter into the indices employed, until full adjustment has actually been attained it will always appear to have been more nearly attained than it has been in fact.

18. Next, diminishing somewhat the *extensiveness* of our inquiry, let us render it, over a limited range, somewhat more *intensive*. We have to contemplate a movement from one position of full equilibrium to another. The equations leading up to conditions (I) and (II) in section 14, when combined together, yield $K = R \cdot \frac{{}^s p_e}{{}^a p_i}$. Let us, for the purpose of the present argument, suppose that the price level in the countries other than the one in which we are primarily interested

unity (*e.g.* perhaps if her imports are chiefly wheat), a fall in foreign demand will expand, and a rise contract, the number of England's work-people engaged in export industries. If England's demand for imports falls off because of diminished desire, there will be fewer men in England's export trades; in the reverse case more men. If England's demand falls off because of diminished productive efficiency, there will be fewer men engaged in those trades, should Otherland's demand have an elasticity greater than unity, and more, should it have an elasticity less than unity: in the reverse case opposite consequences will follow.

is fixed. This implies that ${}^d p_i = 1$. Hence we have $K = R \cdot {}^s p_e$, or ${}^s p_e = \frac{K}{R}$. But, from (III), ${}^s p_e = {}^s p_h$.

Therefore ${}^s p_h = \frac{K}{R}$. That is to say, if the real ratio of interchange is unaltered, the English price level both of pure export goods and also of pure home-goods—I shall call this henceforward the English price level—will be unaltered, provided that the rate of exchange also is unaltered: should that be altered, the English price level will be altered in inverse proportion. Further, if the real ratio of interchange is altered, it is impossible for both the rate of exchange and the English price level to be unaltered; but the English price level will be unaltered if the rate of exchange is altered in the same proportion as the real ratio of interchange, whereas, if the rate of exchange is unaltered, the English price level will be altered in the same proportion as the real ratio of interchange. Thus, on the assumptions here taken, if an influence is introduced, which, left to itself, would move the real ratio of interchange against a country, that country's price level can be prevented from falling if, and only if, either (1) a contrary influence is invoked to prevent the real ratio of interchange from falling, or (2) the rate of exchange falls in the same proportion as the real ratio of interchange. The most obvious way of invoking an influence to prevent the real ratio of interchange from falling is for the country affected to offer promises for sale abroad, thus causing the foreign demand for its stuff (including these promises) to rise. Thus, during and for a little time after the war, the excess purchases of the Allies from the United States were balanced by American loans; and, over the period of the Dawes plan German reparation payments were similarly offset by American loans. A like effect can be produced if the initiating cause of change is a fall in the foreign demand for, say, English stuff, and if England happens to be a country which, in the old equilibrium, has been accustomed annually to

make large investments abroad. The Government, by forbidding or suitably restricting foreign investment, that is, by preventing its citizens from purchasing certain sorts of foreign stuff, namely, promises, can cause the English real demand schedule for the sum-total of available foreign stuff to fall; and, provided that the former normal scale of foreign investment was sufficiently large, to fall far enough to balance its own or its citizens' new requirements. There seems no reason why a new equilibrium attained in that way should not be permanent; but it obviously implies a contraction in the scale of English export industries. The same effect on the real ratio of interchange, unaccompanied by this last incident, can evidently be produced by government prohibitions against a sufficiently large category of imports. All the above devices were employed by several European Governments anxious to maintain their exchanges in the difficult period following the war. When an influence has been introduced that turns the real ratio of interchange against a country, and conditions are such that this influence cannot be offset by a cancelling influence, either the price level or the rate of exchange in the country must fall in such a way as to match the fall in the real ratio of interchange. Thus, assuming sterling and dollar prices to be constant, suppose that the real ratio of interchange, in consequence of the need for reparation payments, moves against Germany 10 per cent. This implies either a 10 per cent. fall in the German internal price level or a 10 per cent. fall in the sterling value of marks, or a fall of a per cent. in the German price level *plus* a fall of approximately $(10-a)$ per cent. in the mark exchange. One or other of these things *must* happen. The idea that a reparation annuity, of a sort that turns the real ratio of interchange against her, can be provided by Germany out of its own resources—we have deliberately ruled out foreign borrowing—without marks becoming *either* less valuable in terms of sterling, *or* more valuable in terms of linen (*i.e.* German export goods) than they would otherwise have been is

illusory. One or other of these two changes is a necessary condition of the new equilibrium. If the German price level of German-made goods is maintained, the German exchange must fall; if the German exchange is unaltered, the German price level must fall. It is in the power of the German Government, by regulating the volume of its currency, to maintain either the mark exchange or the mark price level. It is not in its power, in the absence of foreign borrowing, to maintain both. Since in the actual arrangements for German reparation payments it is contemplated that the mark exchange shall be maintained at approximately 20 marks per £, it is necessary for the new equilibrium, when reparation annuities come to be paid, not out of borrowings, but out of Germany's own resources, that the volume of German money shall be contracted and German prices of German-made goods in terms of marks reduced below what, other things being equal, they would have been in the absence of reparation payments.

19. In a perfectly frictionless world it would make no difference to a country—gains or losses to payers of fixed money interest being set off against losses or gains to receivers of it—whether a falling off in the foreign demand for its stuff, resulting in an adverse movement in the real ratio of interchange, manifested in the form of a drop in the rate of exchange or in that of a drop in the price level of home goods. In either case real incomes and real wages (so far as money wages are spent on imports) would be diminished; and in either case some workpeople would have to shift away from the export trades into home trades. Similarly, it would make no difference whether an increase in a country's demand for foreign stuff to provide reparations, leading, in like manner, to an adverse movement in the real ratio of interchange, manifested through a fall in the rate of exchange or through a fall in the price level. In this case real wages would fall while workpeople were shifted *into* the export trades. Whether, over and above these things, money wages and money prices fell in a common

proportion would not matter. The actual world, however, is not frictionless. The real movements, *i.e.* the fall in real wages and the shift in the distribution of workpeople, will neither of them take place smoothly; and frictional resistance to them is bound for a time to produce unemployment. When conditions are such that, besides the real movement, there is also a nominal movement—*i.e.* a fall in money incomes associated with a parallel fall in money prices—this movement, though it would, *when completed*, injure no one, will, nevertheless, also encounter friction. The sum-total of frictional resistance, and so of the unemployment that this generates, will, therefore, be *pro tanto* larger if the new equilibrium has to be reached through a fall in the price level than if it is reached through a fall in the rate of exchange. In any event the frictional resistance on the part of wage-earners, whether against a real wage reduction only or against a real reduction *plus* a further nominal one, is likely to be more substantial in industries sheltered from foreign competition than in industries exposed to it. In so far as this is so, the wage-earners in the unsheltered industries suffer an extra injury through having to pay “unduly” high prices for the things and services produced by their sheltered colleagues. If the State chooses it can, of course, obviate frictional resistance on the part of wage-earners—at all events for a time—by levying taxes on non-wage-earners and using the proceeds in wage subsidies sufficient to prevent either a real or a nominal fall in rates.

THE STATISTICAL DERIVATION OF
DEMAND CURVES¹

1. FOR the purpose of this study demand curves are conceived as stating the quantities of a commodity that a market will buy during a short interval, say a year, in response to different average prices proper to the interval. We thus tacitly assume that variations of price *within* the interval have no significant effect and that, for practical purposes, the average price proper to the whole interval may be regarded as if it were also the actual price proper to each part of it. Provided that our intervals are made reasonably short, no serious error is likely to result from this simplification.

2. In the preceding paragraph the phrase, the price "proper to" a given interval, must be understood in a special sense. It sometimes happens that the prices recorded for, say, a particular week are not the prices at which the things that have changed hands in that week, and so come into the record of quantities, have actually been sold. The bulk of the money has changed hands as a result of contracts made some time ago at prices ruling then or at "future" prices anticipated then. When this happens there is no direct connection between the price recorded for the week and the quantity of sales recorded for it. For constructing demand schedules there ought to be set against the quantity the price at which the items included in it were, in fact, sold. It is this, and not the contemporaneous recorded price, that constitutes the price "proper to" any given interval. Detailed knowledge of the arrangements under which particular commodities are marketed is needed to reveal

¹ *Economic Journal*, September 1930.

this price; and, when, in lack of such knowledge, contemporaneous recorded prices are used, error may result. The risk of this is obviously greatest when price-quantity records over a succession of very short intervals—*e.g.* daily or weekly intervals—are employed. Provided, however, that our intervals are made reasonably long, *e.g.* if annual averages of quantities and prices are used, it may be hoped that, for most ordinary commodities, errors due to this cause will not be large. In what follows it is assumed that we are concerned with commodities in which the recorded prices for our intervals may be regarded as the prices proper to them, or, failing that, that detailed inquiry has enabled us to substitute the “proper” for the recorded prices.

3. The definition given in the first sentence of this article makes the demand curve relevant to any interval connect prices and quantities in that interval without reference to anything outside it. Thus we must not say that the demand curve at any time is one thing from the standpoint of a short period and another thing from the standpoint of a longer period. If the price P_1 of a first interval has fallen in a second interval to P_2 , and has been held at that level in the third interval also, and if, as a consequence of the price situation, the quantity purchased is greater in the third interval than in the second, this fact must be expressed by saying that the low price in the second interval has reacted to make the demand curve in the third interval higher than it would otherwise have been. In every interval there is a single definite demand curve, no matter by what process it has become what it in fact is.¹

4. One further preliminary point must be made clear.

¹ It should be noticed that, if a definition of this type is employed in dealing with problems of tax incidence, the fact that the position of the demand curve in one interval may be affected by the price that ruled in a prior interval makes it necessary to use a more complex formula for determining the relation between taxes and resultant price changes than would have been necessary had our demand curve stated the relation between prices and quantities when a sufficient time is allowed to admit of their being fully adjusted to one another.

When it is said that there is, in respect of any commodity, a single definite demand curve for each interval, this must not be taken to imply that the quantity demanded is a function of the price of that commodity and of nothing else whatever. It may also be a function of *the conditions of supply* of several other things. But, in respect of each interval, these conditions are presumed to be constant. More commodiously, if t be the distance of any interval from some basal moment, we write, ignoring the fact that our intervals are in practice of finite duration, $x_t = \phi(p, t)$. In respect of a given interval t has some constant value, say T ; and, when this is given, all the other conditions relevant to the quantity demanded, except only the price of our commodity, are conceived as frozen solid. So interpreted, the statement that there is, in respect of our commodity, a single definite demand curve in respect of each interval is true, no matter how many substitutes and so on there may be for it.

5. The nature of our demand curves being thus understood, it is evident that the whole of what statistical studies can accomplish directly is to give us a single price-quantity relation in respect of each interval; that is to say, a single point on the demand curve appropriate to each interval. The data by themselves yield this and nothing else whatever. It is, therefore, impossible to derive the demand curve as a whole or any part of the demand curve (save the single given point) in respect of any interval unless we marry to the statistical data some hypothesis or hypotheses external to them and derived from elsewhere. The purpose of this paper is to study certain hypotheses between which and the data marriage may be expected to be fruitful.

6. Before the main problem is attacked it will be well to make clear what is meant by the derivation of a demand curve from statistics in an ideally simple case where none of the complications of real life are present. Suppose, *per impossible*, that we have, not one price and quantity, but a number of different prices and quantities

all relating to the same interval; or, what comes to the same thing, suppose it to be known *a priori* that the demand curves of all our intervals are exactly alike, so that our price-quantity data refer to the same demand curve, and all the points of which they are co-ordinates lie on this curve. Even now the data by themselves do not enable us to derive the curve; for we have no evidence about the part of it that lies beyond or between the observed points; and there are an infinite number of ways in which a line can be drawn joining any two points.¹ We, therefore, need some hypothesis which will enable us to infer unknown points from known ones. Nobody seriously contends that any plausible hypothesis is available for purposes of extrapolation: that is, for making inferences about the part of the demand curve which lies at any substantial distance beyond the region over which observations are available. But over the region in which our observations lie there is a plausible hypothesis available. This is that the rate at which the ratio $\frac{\text{price}}{\text{quantity}}$ changes is not likely itself to change by sudden jumps; in other words, that the demand curve, when drawn out in a figure, is likely to have a smooth and not a kinky appearance. This implies, further, that the part of the curve joining any two points that are very close together will not differ appreciably from a straight line. On this basis what we have to do is to draw a free-hand line between all the known points in such a way as to make it as smooth and as little jerky as possible. The result should be an approximation to the actual demand curve. If we are given a great many points fairly close together, all plausible drawings of the

¹ It is this fact which Professor Schultz has in mind when he writes: "In order to derive an unequivocal coefficient of elasticity, we must first derive the equation to the demand curve" (*Statistical Laws of Supply and Demand*, p. 14); that is to say, we cannot derive the elasticity at any point from our knowledge of that point and of other points at however small a finite distance from it until we know the course of the curve between the points.

curve will be very much alike. But, if there are any substantial gaps in the range of observations, alternative curves differing appreciably from one another may fit the facts almost equally well. We are then only entitled to say that the actual demand curve over the range of observations lies somewhere between specified limits. In the former case, to put the matter otherwise, our inferred demand function is subject to a small, in the latter to a large probable error.

7. In real life there is, in general, no warrant for the hypothesis that the demand curves in the different intervals for which data are available are all exactly alike. Such a state of things is obviously very improbable *a priori*. Moreover, if, with respect to any ordinary set of data, we tentatively postulate it and proceed to construct the demand curve proper to it, the nature of the results will often show *a posteriori* that the hypothesis is not appropriate. This will be so if, as may well happen, no curves except such as contain violent twists and turns can be made to pass through all the observed points. In short, in all ordinary cases in real life the demand curves in our different intervals must be presumed to be different. While retaining the hypothesis that the demand curve for each interval is smooth and not kinky, we require then, if our statistical data are to yield any result, some new hypothesis or hypotheses in place of the hypothesis that the curves for all the intervals are exactly alike.

8. The simplest hypothesis, which, when it fits the facts, completely serves our purpose, is that the differences between the demand curves in different intervals are all of a sort that can be definitely known and calculated. Thus, if between two given intervals population alters in a defined proportion, while real income per head remains unaltered and monetary arrangements are such that money income per head is also unaltered, and if nothing else whatever relevant to the demand curve for our commodity takes place, the demand curve in the second interval must lie throughout its course at one (the same)

horizontal distance from the demand curve in the first interval, and this distance must be such that the quantity associated with any given price in the second interval is equal to the quantity so associated in the first interval multiplied by the fraction $\frac{\text{population in the second interval}}{\text{population in the first interval}}$.

Thus, if that fraction be m and if x'_1 and x'_2 be the quantities in the demand curves proper to any two intervals that are associated with any price p , then $x'_2 = mx'_1$. Let p_1, p_2 and so on be the prices and x_1, x_2 and so on the quantities actually observed for the successive intervals. It follows that, from the quantity observed in the second interval in association with the price p_2 , we can *infer* the quantity that would be associated with the price p_2 in the demand curve of the first interval; and similarly for the prices p_3, p_4 and so on. The demand curve for that interval can then be derived in the manner described in the preceding section; and, when this has been done, the demand curve for any r th interval can also be derived by multiplying the quantity associated with each price in the demand curve of the first interval by the fraction $\frac{\text{population in the } r\text{th interval}}{\text{population in the first interval}}$. It is easy

to see that, if population and real income per head remain stationary, but the general level of prices is altered through currency movements, an exactly analogous method of derivation is available. The price in any r th interval being p_r and the quantity x_r , the price on the demand curve of the first interval associated with a quantity x_r must be p_r multiplied by the fraction $\frac{\text{general price index in the first interval}}{\text{general price index in the } r\text{th interval}}$. Thus the de-

mand curve for the first interval can be derived: and in like manner the demand curve for any other interval. This derivation, it should be noted, is only satisfactory when conditions are such that no important changes in the general price index are taking place otherwise than in consequence of currency changes. Subject to this condition, it is further easy to see that, when both the

above causes of change are at work, the two preceding methods of derivation can be combined. It may be added, as a point of interest, that, when the population factor alone is in play, the elasticity of demand must be the same in the demand curves for all the intervals *in respect of any assigned price*: when the currency factor alone is in play, the elasticity must be the same in all of them *in respect to any assigned quantity*: when both factors are in play, neither of these propositions is true.

9. In real life it is very improbable *a priori* that the demand curves in a number of successive intervals (of appreciable length) for a commodity taken at random will differ from one another solely on account of causes whose effects can be calculated from facts external to the commodity in the manner described in the preceding section. Nor have we to do here with a mere vague general improbability. We know for a fact that many causes quite different in type from those so far described are frequently at work. First, in respect of commodities of a kind for which people can, if they will, postpone or antedate their purchases—and this is true in some degree of most commodities—the demand curve of one interval may differ from that of another because in the one interval people's expectation about what is going to happen to prices and production in the future is different from what it is in the other. If, for example, they think that a duty will probably be put on motor-cars, this will stimulate them to buy now; if they think that a duty will probably be taken off, that will stimulate them to hold their hand. This, of course, applies not only to dealers, but sometimes to ultimate consumers as well. Secondly, in respect of commodities that are rivals or complements to other commodities, the demand curve of our commodity may be different in different intervals because the supply conditions of the rivals or complements are different in the two intervals. Thirdly, productive technique in general, and therewith real income per head, may alter. Since, when a man becomes better off, he does not simply increase his purchases of all things

in equal proportion, this implies that his demand curve for most particular things in terms of things in general is altered. With the currency so adjusted as to keep the general level of prices unchanged, this means that the demand curve as expressed in money for most particular things is altered correspondingly. The kind and degree of alteration that takes place will be different for different commodities and cannot possibly be determined *a priori*. Fourthly, the distribution of purchasing power may change in a progressive manner in favour of the poorer as against the richer classes. This must imply a relative constriction in the demand for expensive luxuries and a relative expansion in that for mass-comforts. Fifthly, people's tastes may alter. Professor Schultz, for instance, believes that there has been for a long period a growing taste for sugar in the United States. Obviously this implies a series of divergencies between the demand curves of successive intervals of a sort that cannot be calculated *a priori*. Lastly, tastes remaining unaltered, the distribution of purchasing power may be changed in ways that favour or injure groups among whom the taste for our commodity is especially keen. The demand curves will be affected by this sort of change in the same manner as they are by alterations in tastes. In view of these facts it is obvious that the method of deriving demand curves described in the preceding section is not adequate to the conditions of real life. If confirmation of this conclusion is needed, we have only to apply the hypotheses of that section to a few sets of statistics. The resultant demand curves will be found to embody twists and turns so violent as to leave no doubt that these hypotheses are not applicable.

10. In recent years a number of writers, recognising these facts, have attacked our problem. Professor Moore, Dr. Schultz, Professors Warren and Pearson and Dr. Leontief have made notable contributions on these lines. I do not propose here—nor indeed am I qualified—to examine in detail this important pioneer work. A little must be said, however, about some of the methods

employed. In his *Statistical Laws of Demand and Supply* Dr. Schultz, examining more particularly sugar statistics, employs two methods which he names respectively the method of link relatives and the method of trend ratios. The method of link relatives may be set out thus. The link relative of consumption for any year is obtained by dividing the consumption of that year by the consumption of the preceding year; and the link relative of price is obtained in the same way. Points are then set in a system of rectangular co-ordinates, the co-ordinates of each point being the link relative of price and the link relative of consumption for the relevant year. A straight line is then fitted to these points on the assumption that the reason why any points fail to fall on the line is that they are subject to vertical and horizontal errors, the two sorts being of equal importance. The equation of the line so obtained is the law of demand in terms of link relatives. From this the law of demand for any given year in absolute quantities—*i.e.* the demand curve—is readily derived by a simple substitution.¹ The method of trend ratios proceeds on the same lines, save that here the fundamental data are the ratios of consumption and prices in each year to their respective trends. This method has the disadvantage that, if the movements of consumption and of prices are both perfectly smooth, being brought about, for example, by a steady improvement in technique in the face of constant conditions of demand, it will necessarily fail: a paradox from which the rival method is free. It is plain that both these methods require for their justification the assumption that the demand curves may be treated without serious error as straight lines and that their movements conform to certain conditions. It is not, however, easy to make explicit precisely what these conditions are. A mathe-

¹ *Statistical Laws of Demand*, p. 41. I am not clear as to the relation which Dr. Schultz conceives to hold between this demand curve and what he calls the "static" demand curve of Marshall's analysis. He cautions the reader against regarding the two as equivalent (p. 94); but in his discussion of taxation in Part III of his book he himself appears so to regard them.

mathematical machine is grinding out results; but the *exact* nature of what was put into the machine at the beginning is, at all events to non-expert readers, somewhat obscure. This is true in a still higher degree of the more complicated method of deriving demand curves employed in his interesting article in the *Weltwirtschaftliches Archiv* of July 1929 by Dr. Wassily Leontief. Without venturing on further criticism, I desire here to suggest a method more tentative and less mechanical in character than those which I have been describing, in which the assumptions made are precisely stated and a rough judgment about the reliability of results is easily reached.

11. The basis of this method is an elementary proposition in geometry. Suppose that we are given three points with co-ordinates (p_1, x_1) , (p_2, x_2) , (p_3, x_3) ; and that three parallel straight lines equidistant from one another vertically (which implies also horizontally) have to be drawn to pass through these points.

$$\begin{aligned} \text{Write} \quad d_1 &= p_1 - p_2 \\ d_2 &= p_2 - p_3 \\ c_1 &= x_1 - x_2 \\ c_2 &= x_2 - x_3. \end{aligned}$$

Write also a_1 and a_2 for the vertical distance of the first line above the second and of the second line above the third. Then the slope of the lines

$$= \pm \frac{d_1 - a_1}{c_1} = \pm \frac{d_2 - a_2}{c_2}.$$

This is obviously equal to

$$\pm \frac{(d_1 - a_1) - (d_2 - a_2)}{c_1 - c_2} = \pm \frac{(d_1 - d_2) - (a_1 - a_2)}{c_1 - c_2}.$$

Thus two triads of lines can be drawn through our three points, the slope of the lines in each triad being equal numerically but of opposite sign. If now we add the requirement that the lines passing through the three

points must be inclined negatively, only one triad is possible, namely, that one of the aforesaid two whose slope is negative, that is to say, the one whose slope is

$$-\frac{(d_1 - d_2) - (a_1 - a_2)}{c_1 - c_2}.$$

When $a_1 - a_2 = 0$ this reduces to $-\frac{d_1 - d_2}{c_1 - c_2}$, no matter what the value of the a s may be. In these conditions, then, the slope of all the lines in the triad equals $-\frac{d_1 - d_2}{c_1 - c_2}$. When $(a_1 - a_2)$ is positive, the slope is numerically $< -\frac{d_1 - d_2}{c_1 - c_2}$. When $(a_1 - a_2)$ is negative, the slope is numerically $> -\frac{d_1 - d_2}{c_1 - c_2}$. That is to say, when the curve proper to the third interval is further to the left of, or less to the right of, that proper to the second interval, than that proper to the second interval is of that proper to the first, the formula $-\frac{d_1 - d_2}{c_1 - c_2}$ under-states the numerical value of the slope of the curves: in the converse case it over-states it.

12. Now it is obvious that this piece of geometry can have no relevance to the problem of deriving demand curves unless we are entitled to assume that these demand curves, over the range covered by our observations, either are, or are related in a definite manner to, straight lines. It does not seem likely that many demand curves actually *are* straight lines; for this implies that the change of $1d.$ in price per unit is associated with the same absolute change in quantity purchased whether the price we start from is six pounds or six pennies. It is much more plausible to hold that an equal (small) percentage change in price is associated with the same percentage change in quantity purchased whatever (over the relevant range) is the initial price. In other words, it is much more plausible to hold that our curves (over

the relevant range) are constant-elasticity curves than that they are straight lines. Indeed it is *a priori* probable that over small ranges demand curves do, in fact, usually approximate to constant elasticity curves. Now it so happens that the constant elasticity curve, though, of course, it is not a straight line, is related in a precise and definite manner to a straight line. For, if price be written p and quantity purchased x , the elasticity of demand in respect of a purchase x may be written $\frac{d \log x}{d \log p}$.

Hence, if this elasticity is constant, a curve drawn with the logarithms of quantities purchased as abscissæ and the logarithms of prices as ordinates will be a straight line. This fact has been made use of by Dr. Leontief in the article cited in section 10.

13. In order that our piece of geometry may be brought successfully into play, it is necessary, however, not only that the curves in any triad shall be straight lines, but also that (1) they shall be parallel, and (2) that the distance between the first and second and between the second and third shall be equal. The logarithmic lines will be parallel if the elasticities of demand (assumed constant over the relevant range) are the same in each of the three successive intervals. It is not unreasonable to suppose that, with moderately short intervals, this condition will often be approximately satisfied. The condition of equi-distance between the first and second and between the second and third curves will be approximately satisfied if and in so far as the state of demand is changing under the influence of causes that act in a continuous and gradual manner. Strictly, it will be noticed, equal distances between successive curves imply, since our curves are logarithmic, increasing distances between the demand curves in non-logarithmic form from which they are derived. But, with small intervals, the difference between equal percentage and equal absolute distances is very small. Of the causes examined in section 9 some are likely to operate as a general rule in this way; but others, notably shifts in expectation about

the relation between the future and the present prices of the commodity directly concerned, are likely to operate sporadically. When causes of the latter type are in play the condition of equi-distance between the first pair and the second pair of lines in our triad is likely to be very seriously violated.

14. The method of deriving demand curves which I am proposing may now be set out. First make tables, for the successive intervals given in observation, of (1) the logarithms of observed prices and (2) the logarithms of observed quantities. Secondly, writing p_1, p_2 , etc. for the successive prices, and x_1, x_2 , etc. for the successive quantities, calculate

$$\frac{(\log x_1 - \log x_2) - (\log x_2 - \log x_3)}{(\log p_1 - \log p_2) - (\log p_2 - \log p_3)}$$

and place the result against the third interval; calculate

$$\frac{(\log x_2 - \log x_3) - (\log x_3 - \log x_4)}{(\log p_2 - \log p_3) - (\log p_3 - \log p_4)}$$

and place the result against the fourth interval; and so on for all the intervals. When in respect of any interval the figure obtained in this manner is positive, it cannot measure the elasticity of demand for the relevant triad; a swing in demand must have occurred between the second and third intervals widely different from that which occurred between the first and second. When the figure attained is negative, it *may* measure this elasticity. If the distances between the first and second and between the second and third lines of the logarithmic demand curves as they actually exist in real life are equal, it *does* measure it. For example, if all other things, including real income per head, are unchanged over the period covered by any triad of actual curves, and if population and (or) money income per head change in the same proportion—so that their logarithms change by the same absolute amount—between the first and second and between the second and third intervals, the

figure that emerges is the ϵ and the width of demand. Nothing would be gained by tried to plathe original data for population and currency change before manipulating them. If the demand curve moves less towards the right or more towards the left in the second half than it does in the first half of our triad, the figure that emerges is less than the true elasticity of demand: in the converse case it is greater than the true elasticity of demand. Thus, if, other things being equal, population or money income per head is increasing at a constant absolute rate, which implies a decelerating geometrical rate, our figure will slightly under-estimate the true elasticity of demand; and by employing data corrected for population and general price changes we shall obtain a figure which will be slightly larger and, *pro tanto*, more correct. As a rule, for most sets of these successive demand curves there is likely to be some disturbance consequent upon discrepant swings of demand as between the two pairs of intervals. We cannot tell *a priori* what degree of disturbance has occurred in respect of any given set; though, for certain periods, for example those during the course of which an expectation of change in the rate of duty imposed on the commodity concerned has emerged, considerable disturbance may be looked for. When, however, we bring into account all our figures together, useful results may sometimes be obtained. The table of calculations taken as a whole may, indeed, reveal conditions so chaotic that no inference about the form of the demand curve can safely be drawn from it. If, however, the negative figures constitute a large proportion of the whole, if a large number of figures obtained are grouped together fairly closely, and if there are no indications of a substantial trend of increase or decrease, it is probable that throughout the observed period the form of the demand curve has been substantially similar and that the elasticity of demand lies within limits that can be specified. In other conditions the table will suggest that alterations of form have taken place about which something definite can be

said. It should be noted that, since a given swing in the demand curve directly affects the price related to a given quantity—and the quantity related to a given price—by some absolute amount—the resulting proportionate error is likely to be very large when the differences among either the observed prices or the observed quantities in a set of these demand curves are very small. Hence it will be well to suspect the witness of sets of this kind and to prefer that of sets where both the observed prices and the observed quantities differ substantially among themselves. I suggest then that, in tables obtained in the way proposed above, all positive figures should be ignored and also negative figures that are seriously suspect on the ground just indicated. On the assumption that the (logarithmic) demand curves of all the intervals are parallel straight lines, each of the figures in the final column may be regarded as an "observation" of the elasticity of demand, subject to an "error" due to a deviation from equality between the distance of the second logarithmic demand curve from the first and the distance of the third curve from the second. It is not, however, to be expected that the errors in this type of observation will be distributed in accordance with the normal law. Hence a mechanical treatment of them is not warranted. More particularly, in view of the fact that some of the observations with which we are proposing to work may easily, on account of "error," show a very large (negative) elasticity, while none can show an elasticity numerically less than 0, no especial significance can be attached to the arithmetic average of these observations. The following procedure is probably as little unsatisfactory as any other. Find the limits within which half of the unrejected observations lie. If the whole table shows a reasonably narrow range of scatter, and if the proportion of observations which has had to be extruded is small, the elasticity of demand may be expected to lie within this limit, and a figure in the neighbourhood of the median is more likely to be right than one far from it. The larger the proportion of positive

as in the original table and the wider the scatter, the less confidence are we entitled to place in our results.

15. It remains to illustrate the above method in practical working. For this purpose I shall apply the method

TABLE I

	Col. I. Log. of total consumption (in thousands of short tons) of sugar in the U.S.A.	Col. II. Excess of each year's predecessor over itself, d_r .	Col. III. Log. of New York whole- sale price in cents per lbs.	Col. IV. Excess of each year's predecessor over itself, c_r .	Col. V. Elasticity of demand, i.e., $\frac{d_r - d_{r+1}}{c_r - c_{r+1}}$.
1890	3.21854		0.79036		
1891	3.32552	-0.10698	0.66661	0.12375	
1892	3.31723	0.00829	0.63809	0.02852	-1.210
1893	3.32960	-0.01237	0.68502	-0.04693	0.273
1894	3.35295	-0.02335	0.61490	0.07012	-0.093
1895	3.33925	0.01370	0.61826	-0.00336	-0.504
1896	3.34143	-0.00218	0.65629	-0.03803	0.458
1897	3.36530	-0.02387	0.65350	0.00279	-0.531
1898	3.35083	0.01447	0.69592	-0.04242	-0.848
1899	3.36680	-0.01597	0.69188	0.00404	-0.655
1900	3.39550	-0.02870	0.72591	-0.03403	0.334
1901	3.42439	-0.02889	0.70329	0.02262	-0.003
1902	3.45849	-0.03410	0.64885	0.05444	-0.163
1903	3.45576	0.00273	0.66033	-0.01748	-0.512
1904	3.49122	-0.03546	0.67870	-0.01237	-7.469
1905	3.46953	0.02169	0.72066	-0.04196	-1.931
1906	3.50623	-0.03670	0.65466	0.06600	-0.540
1907	3.52543	-0.01920	0.66736	-0.01270	-0.222
1908	3.55242	-0.02699	0.69522	-0.02786	0.513
1909	3.56217	-0.00975	0.67806	+0.01716	0.382
1910	3.57426	-0.01209	0.69653	-0.01847	0.064
1911	3.57449	-0.00023	0.72795	-0.03142	-0.915
1912	3.59384	-0.01935	0.70252	0.02543	-0.336
1913	3.62242	-0.02858	0.63124	0.07128	-0.201
1914	3.62449	-0.00207	0.67052	-0.03928	-0.239

first to two sets of figures collected by Dr. Schultz. My object being merely to illustrate a method, these figures are taken as they stand, and the question whether the recorded prices are rightly treated as "proper" prices in the sense of section 2 is not raised. I have taken

account of all negative figures and do not employ the further refinement, suggested above, of rejecting the witness of triads yielding such figures that I have called above suspect. Table I is derived from Dr. Schultz's table¹ giving the total consumption and the money price of sugar in the United States; and Table II from his table² giving the consumption per head and the real price (*i.e.* money price corrected by an index of general prices) for the same.

In Table I, Column V contains positive values opposite the years 1893, 1896, 1900, 1908, 1909 and 1910. In every case except that of 1909 the positive value is consequent upon both the price-difference and the quantity difference being negative. This suggests that there has been manifest a general tendency towards an accelerated upward movement of the demand curves; and this suggests in turn that any figures derived on the assumption that the distances between the curves proper to adjacent intervals are constant will exaggerate the elasticity of demand. Of the 17 figures with negative signs in Column V the maximum (numerically) is -7.474 and the minimum $-.003$. The middle figure (median) is $-.512$. More than half the negative figures—the nine middle figures—lie between $-.222$ and $-.655$. The median of the negative figures for the years 1890 to 1902 is $-.531$ or $-.512$; for the years 1903 to 1914 it is $-.686$.

In Table II the figure in Column V is positive for 1893, 1896, 1900, 1904, 1908 and 1909. Most of these years are the same as those that give positive figures in Table I. Of the 17 negative figures the maximum (numerically) is -3.114 ; the minimum $-.035$. The median is $-.409$. The middle nine negative figures lie between $-.218$ and $-.535$. The median of the negative figures for the period 1890 to 1902 is $-.535$ or $-.409$; for the period 1903 to 1914 it is $-.359$.

¹ *Statistical Laws of Demand and Supply*, p. 213.

² *Ibid.*, p. 214.

There is no notable difference between the results obtained from the uncorrected and those obtained from the corrected data. Nor, on the whole, is there sufficient ground for holding that the elasticity of demand for

TABLE II

	Col. I. Log. of per caput con- sumption in lbs.	Col. II. Excess of each year's predecessor over itself, d_r .	Col. III. Log. of price per lb. cor- rected by general in- dex number.	Col. IV. Excess of each year's predecessor over itself, c_r .	Col. V. Elasticity of demand, i.e. $\frac{d_r - d_{r+1}}{c_r - c_{r+1}}$
1890	1.72263		0.82236		
1891	1.82151	-0.09888	0.70424	0.11812	
1892	1.80482	0.01669	0.70355	0.00069	-0.984
1893	1.80889	-0.00407	0.73190	-0.02835	0.714
1894	1.82413	-0.01524	0.71675	0.01515	-0.256
1895	1.80209	0.02204	0.71357	0.00318	-3.114
1896	1.79588	0.00621	0.77093	-0.05736	0.261
1897	1.81158	-0.01570	0.76827	0.00266	-0.365
1898	1.78888	0.02270	0.79120	-0.02293	-1.501
1899	1.79657	-0.00769	0.75740	0.03380	-0.535
1900	1.81425	-0.01768	0.75793	-0.00053	0.290
1901	1.83696	-0.02271	0.74617	0.01176	-0.409
1902	1.86216	-0.02520	0.66521	0.08096	-0.035
1903	1.85065	0.01151	0.67237	-0.00716	-0.416
1904	1.87679	-0.02614	0.68485	-0.01248	7.077
1905	1.84819	0.02860	0.72681	-0.04196	-1.856
1906	1.88138	-0.03319	0.64562	0.08119	-0.501
1907	1.88930	-0.00792	0.63478	0.01084	-0.359
1908	1.90956	-0.02026	0.68151	-0.04673	0.214
1909	1.91275	-0.00319	0.63195	0.04956	0.177
1910	1.91169	0.00106	0.63286	-0.00091	-0.084
1911	1.89875	0.01294	0.69975	-0.06689	-0.180
1912	1.91009	-0.01134	0.64748	0.05227	-0.204
1913	1.93146	-0.02137	0.57171	0.07577	-0.426
1914	1.92583	0.00563	0.61972	-0.04801	-0.218

sugar has altered materially over the period covered by the statistics. It seems probable that the reason why different results are obtained from different successive triads is that the demand curves have shifted unequally as between the two pairs covered by most triads. We

are entitled, I think, to conclude with confidence that the elasticity of demand is not less than $-.250$ and not greater than $-.550$. It probably lies somewhere in the neighbourhood of $-.4$. This conclusion may be compared with those reached by Dr. Schultz. He finds an elasticity of demand under normal conditions of consumption of $-.5$: and further that, even when conditions of consumption differ substantially from normal, the coefficient of elasticity is still numerically less than 1.0 .¹

16. Let us next apply my method to the monthly figures for copper sold in the United States over the years 1909-13 which Dr. Leontief has collected.² Here there is serious doubt whether the recorded prices are "proper" prices in the sense of section 2; but, again, my purpose being illustrative, I do not raise that issue. In Column VI of this table there are 58 figures altogether. Of these, 33 are positive, including five that are infinite. Of the 33 positive figures, 15 result from a union of two positive and 18 from a union of two negative elements. There remain only 20 negative figures, including one that is infinite. Of these, apart from the infinite figure, the maximum is -5.0 : the minimum $-.08$. The median is -1.0 or $-.91$. The 10 middle figures out of the 20 lie between $-.38$ and -1.8 . The prima facie inference is that the elasticity of the demand for copper probably lies between these limits. But the large proportion of positive figures found in our final column shows that the demand curve oscillates in a very irregular manner. This suggests that the above result must be used with great caution. The figure found by Dr. Leontief by a complicated mathematical process is -1.29 . This result is, in my opinion, subject to a probable error—not specified by Dr. Leontief—which forbids us to assert with any confidence that the elasticity of the demand for copper over the period studied has been numerically greater than unity. It is not at all

¹ *Statistical Laws of Demand and Supply*, p. 92.

² *Weltwirtschaftliches Archiv*, July 1929, pp. 32-33.

TABLE III

	Col. I. Log. of quantity of copper consumed in U.S.A.	Col. II. Excess of log. of con- sumption in each month over its suc- cessor = d_r .	Col. III. Log. of price of copper in U.S.A.	Col. IV. Excess of log. of price in each month over its suc- cessor = c_r .	Col. V. Inferred elasticity of demand $\frac{d_r - d_{r+1}}{c_r - c_{r+1}}$	Col. VI. Inferred elasticity of demand to 2 decimal points.
Jan. 1909	215		143			
Feb. 1909	225	-10	112	+31		
March 1909	234	-9	93	+19	$-\frac{1}{12}$	-0.08
April 1909	235	-1	99	-6	$-\frac{8}{25}$	-0.32
May 1909	239	-4	110	-11	$\frac{3}{5}$	+0.59
June 1909	246	-7	121	-11	$\frac{3}{0}$	$+\infty$
July 1909	238	+8	110	+11	$-\frac{15}{22}$	+0.67
Aug. 1909	247	-9	114	-4	$\frac{17}{15}$	+1.13
Sept. 1909	251	-4	110	+4	$-\frac{5}{8}$	+0.62
Oct. 1909	261	-10	104	+6	$\frac{6}{-2}$	-3.00
Nov. 1909	265	-4	118	-14	$-\frac{6}{20}$	-0.30
Dec. 1909	237	+28	124	-6	$-\frac{32}{8}$	+4
Jan. 1910	232	+5	134	-10	$\frac{23}{4}$	+5.75
Feb. 1910	262	-30	125	+9	$-\frac{35}{19}$	-1.84
March 1910	245	-17	123	+2	$-\frac{13}{7}$	-1.86
April 1910	249	-4	105	+18	$-\frac{13}{16}$	+0.81
May 1910	256	-7	99	+6	$\frac{3}{12}$	+0.25
June 1910	284	-28	93	+6	$\frac{21}{0}$	$+\infty$
July 1910	239	+45	87	+6	$\frac{63}{0}$	$+\infty$
Aug. 1910	272	-33	97	-10	$\frac{78}{16}$	+4.88
Sept. 1910	257	+15	93	+4	$-\frac{48}{14}$	+3.43
Oct. 1910	267	-10	99	-6	$\frac{26}{10}$	+2.5
Nov. 1910	256	+11	105	-6	$-\frac{21}{0}$	$-\infty$
Dec. 1910	256	0	100	+5	$\frac{11}{-11}$	-1.00

TABLE III—continued.

	Col. I. Log. of quantity of copper consumed in U.S.A.	Col. II. Excess of log. of con- sumption in each month over its suc- cessor = d_r .	Col. III. Log. of price of copper in U.S.A.	Col. IV. Excess of log. of price in each month over its suc- cessor = c_r .	Col. V. Inferred elasticity of demand $= \frac{d_r - d_{r+1}}{c_r - c_{r+1}}$	Col. VI. Inferred elasticity of demand to 2 decimal points.
Jan. 1911	229	+27	90	+10	$\frac{-27}{-5}$	+ 5'40
Feb. 1911	250	-21	88	+ 2	$\frac{48}{8}$	+ 6'00
March 1911	281	-31	84	+ 4	$\frac{10}{-2}$	- 5'00
April 1911	252	+29	80	+ 4	$\frac{60}{0}$	+ ∞
May 1911	269	-17	79	+ 1	$\frac{48}{3}$	+15'33
June 1911	275	- 6	93	-14	$\frac{-11}{15}$	- 0'73
July 1911	215	+60	96	- 6	$\frac{-66}{-8}$	- 8'25
Aug. 1911	264	-49	127	-31	$\frac{109}{25}$	+ 4'36
Sept. 1911	243	+21	86	+41	$\frac{-70}{-72}$	+ 0'97
Oct. 1911	238	+ 5	86	0	$\frac{16}{41}$	+ 0'39
Nov. 1911	228	+10	101	-15	$\frac{-5}{15}$	- 0'33
Dec. 1911	255	-27	132	-31	$\frac{37}{16}$	+ 2'31
Jan. 1912	242	+13	149	-17	$\frac{-40}{-14}$	+ 2'85
Feb. 1912	259	-17	149	0	$\frac{30}{-17}$	- 1'76
March 1912	265	- 6	167	-18	$\frac{-11}{18}$	- 0'61
April 1912	278	-13	197	-30	$\frac{7}{12}$	+ 0'58
May 1912	268	+10	205	- 8	$\frac{-23}{-22}$	+ 1'04
June 1912	267	+ 1	236	-31	$\frac{9}{23}$	+ 0'39
July 1912	302	-35	235	+ 1	$\frac{36}{-32}$	- 1'12
Aug. 1912	328	-26	243	- 8	$\frac{-9}{9}$	- 1'00
Sept. 1912	326	+ 2	243	0	$\frac{-28}{-8}$	+ 3'50
Oct. 1912	328	- 2	238	+ 5	$\frac{4}{-5}$	- 0'80
Nov. 1912	309	+19	239	- 1	$\frac{21}{6}$	- 3'50
Dec. 1912	322	-13	240	- 1	$\frac{32}{0}$	+ ∞

TABLE III.—continued.

	Col. I.	Col. II.	Col. III.	Col. IV.	Col. V.	Col. VI.
	Log. of quantity of copper consumed in U.S.A.	Excess of log. of consumption in each month over its successor = d_r .	Log. of price of copper in U.S.A.	Excess of log. of price in each month over its successor = c_r .	Inferred elasticity of demand $\frac{d_r - d_{r+1}}{c_r - c_{r+1}}$	Inferred elasticity of demand to 2 decimal points.
Jan. 1913	322	0	217	+23	$\frac{-13}{-24}$	0.54
Feb. 1913	327	-5	175	+42	$\frac{5}{-19}$	-0.26
March 1913	300	+27	168	+7	$\frac{-32}{35}$	-0.91
April 1913	311	-11	184	-16	$\frac{38}{23}$	+1.60
May 1913	316	-5	189	-5	$\frac{-6}{-11}$	+0.54
June 1913	266	+50	166	+23	$\frac{-55}{-28}$	+1.96
July 1913	305	-39	152	+14	$\frac{89}{9}$	+9.89
Aug. 1913	285	-20	188	-36	$\frac{-19}{50}$	-0.38
Sept. 1913	298	-13	213	-25	$\frac{-7}{-11}$	+0.64
Oct. 1913	309	-11	213	0	$\frac{-2}{-25}$	+0.08
Nov. 1913	307	+2	181	+32	$\frac{-13}{-32}$	+0.41
Dec. 1913	308	-1	153	+28	$\frac{3}{4}$	+0.75

surprising that greater uncertainty should attach to determinations of the elasticity of demand for articles like copper, for which the demand is likely to fluctuate violently with variations in general industrial activity, than attaches to similar determinations for staple articles of food, for which the demand is much less inconstant. Moreover, with intervals so short as a month, discrepancies between recorded and "proper" prices are likely to confuse the calculation more seriously than they do with longer intervals. Even, however, with this unpromising material the method I have been illustrating enables us to escape in some degree out of complete nescience.

DEMAND AND SUPPLY EQUATIONS

1. THE fundamental elements in the demand-supply relation are most easily grasped if the subject is approached in a series of stages. Let us begin with two groups of similar persons, A and B, the members each of which, bargaining individually, not collectively, stand ready to exchange their work directly against the other's work without the mediation of commodities; neither group "consumes" any of its own work and neither has anything to offer to the other except its work. These two intentions or attitudes of A and B respectively may be called their demand-supply or their supply-demand attitudes, and may be expressed in demand-supply functions. A's demand-supply function is derived both from his desire for the object he seeks—the utility to him of B's work—and from his aversion from providing payment for it—the disutility to him of his own work; so likewise is B's.

2. A's demand-supply function in its most generalised form can be expressed algebraically thus. Let U_a be the total utility enjoyed by group A in respect of its trade when it is exchanging x_a units of its stuff against x_b units of B's stuff. Thus $U_a = \psi_a(x_a, x_b)$; and A's demand-supply schedule is given by the equation

$$-\frac{\partial \psi_a(x_a, x_b)}{\partial x_b} \div \frac{\partial \psi_a(x_a, x_b)}{\partial x_a} = \frac{x_a}{x_b} \quad \dots \quad (I)$$

This generalised equation takes account of the fact that A's desire for—the utility he derives from—various quantities of B's commodity may depend not only on what he receives but also on what he sacrifices, and vice versa. For example, the longer a man works in a hot room the more beer he is likely to want, and, the more food—up to a point—that he has, the less averse he will be from a given output of work. When this relation of

interdependence is so slight that, for practical purposes, it may be ignored, we attain the simpler relation $U_a = \phi_a(x_b) + F_a(x_a)$; and A's demand-supply schedule is given by the equation

$$-\frac{d\phi_a(x_b)}{dx_b} \div \frac{dF_a(x_a)}{dx_a} = \frac{x_a}{x_b} \dots \dots \quad (\text{II})$$

B's demand-supply schedule is, of course, of like form to A's.

3. For the problem of *exchange* between two groups—*e.g.* in the trade of one country with the rest of the world—it is not necessary that the elements U_a and U_b should be made explicit. For simplicity it is convenient to make use of simpler short-cut functions that express directly A's and B's attitudes towards one another's work without any reference to the grounds of these attitudes. When, in representations of A's attitude, the quantity of B's stuff appears as the dependent variable, it is convenient to speak of the equation attained as a demand-supply function; when the quantity of A's stuff so appears as a supply-demand function; and analogously for representations of B's attitude. There are then six alternative functions available for describing A's attitude. These functions may be set out as follows:

(1) $x_b = \phi_q(x_a)$: quantity demand-supply function.

(2) $x_a = \psi_q(x_b)$: quantity supply-demand function.

(3) $x_b = \phi_p\left(\frac{x_a}{x_b}\right)$: price-of-B-work demand-supply function.

(4) $x_a = \psi_p\left(\frac{x_a}{x_b}\right)$: price-of-B-work supply-demand function.

(5) $x_b = \phi_\pi\left(\frac{x_b}{x_a}\right)$: price-of-A-work demand-supply function.

(6) $x_a = \psi_\pi\left(\frac{x_b}{x_a}\right)$: price-of-A-work supply-demand function.

B's attitude can, of course, be represented by any one of six precisely analogous functions.

4. If it is desired to translate the above analytical expressions into geometrical terms, the following propositions in respect of A—and exactly analogous propositions, of course, apply to B—hold good. With the independent variable measured along the axis of x and the dependent variable along the axis of y the two members of the first pair of the above functions appear as similar curves, the one standing to the axis of x in the relation in which the other stands to the axis of y . With x_b (quantities of B's work) measured along the axis of x and x_a (quantities of A's work) along the axis of y the two functions are represented by identical curves. The same propositions hold good of the two members of the second pair of functions and of the two members of the third pair. Obviously, however, the two members of the first pair yield curves quite different in form from those yielded by the two members of the second and third pairs. Those belonging to the first pair are of the type employed by Marshall in his discussions of foreign trade, sometimes called integral curves—and pass through the origin; those belonging to the second and third pairs are of the type which is familiar in Marshall's and other discussions of domestic value.

5. To each of the six different formulations of A's attitude (and, of course, the same thing is true of B's) there corresponds a different *elasticity*. We are here concerned, it should be understood, exclusively with ordinary point elasticity, not with what Dr. Dalton calls arc elasticity. Our elasticity, that is to say, measures, in respect of defined volumes of exchange, the ratio between small—strictly speaking infinitesimal—proportionate variations in two associated quantities. Suppose that group A is exchanging x_a units of A work against x_b units of B work. Then, in respect of that interchange, first, the elasticity of A's quantity demand-supply curve for B's work in A work is measured by the proportionate change in x_b that would be associated with a small—strictly infinitesimal—

proportionate change in x_a , divided by this latter proportionate change. Call this elasticity E_d . Secondly, the elasticity of A's quantity supply-demand curve of A work against B work is measured by the aforesaid proportionate change in x_a divided by the aforesaid proportionate change in x_b . Call this E_s . Thirdly, the elasticity of A's price-of-B-work demand-supply curve for B work in terms of A work is measured by the aforesaid proportionate change in x_b divided by the associated proportionate change in $\frac{x_a}{x_b}$. Call this e_d . Fourthly, the elasticity of A's price-of-B-work supply-demand curve of A work against B work is measured by the aforesaid proportionate change in x_a divided by the associated proportionate change in $\frac{x_a}{x_b}$. Call this e_s . Fifthly, the elasticity of A's price-of-A-work demand-supply curve for B work in terms of A work is measured by the aforesaid proportionate change in x_b divided by the associated proportionate change in $\frac{x_b}{x_a}$. Call this ϵ_d . Finally, the elasticity of A's price-of-A-work supply-demand curve of A work against B work is measured by the aforesaid proportionate change in x_a divided by the associated proportionate change in $\frac{x_b}{x_a}$. Call this ϵ_s .

We then have :

$$(1) E_d = \left\{ \frac{dx_b}{x_b} \div \frac{dx_a}{x_a} \right\} = \left\{ \frac{x_a}{x_b} \div \frac{dx_a}{dx_b} \right\}$$

$$(2) E_s = \left\{ \frac{dx_a}{x_a} \div \frac{dx_b}{x_b} \right\} = \left\{ \frac{x_b}{x_a} \div \frac{dx_b}{dx_a} \right\}$$

$$(3) e_d = \frac{x_a \cdot dx_b}{x_b \cdot dx_a - x_a \cdot dx_b}$$

$$(4) e_s = \frac{x_b \cdot dx_a}{x_b \cdot dx_a - x_a \cdot dx_b}$$

$$(5) \epsilon_d = \frac{x_a \cdot dx_b}{x_a \cdot dx_b - x_b \cdot dx_a}$$

$$(6) \epsilon_s = \frac{x_b \cdot dx_a}{x_a \cdot dx_b - x_b \cdot dx_a}$$

6. Hence the following equalities are readily deduced :

$$(1) E_{ds} = \frac{1}{E_s}$$

$$(2) E_d = \frac{e_d}{e_s}$$

$$(3) E_d = \frac{e_d}{1 + e_d}$$

$$(4) e_d = -\epsilon_d; \text{ and } e_s = -\epsilon_s.$$

$$(5) e_d + \epsilon_s = -\epsilon_d - e_s = -1.$$

7. The most important implications of these equalities are :

- (1) E_d and E_s are reciprocals of one another and necessarily of the same sign.
- (2) If e_d is positive, E_d is also positive and $< e_d$;
- (3) If e_d is negative and numerically < 1 , E_d is negative and numerically $> e_d$;
- (4) If e_d is negative and numerically > 1 , E_d is positive and numerically > 1 ;
- (5) If $e_d = -1$, $E_d = -\infty$.
- (6) Results analogous to the foregoing, of course, hold good of the relation between E_s and e_s .
- (7) e_d and ϵ_s are not reciprocals of one another. If either of them is negative and numerically < 1 , so also is the other. If one of them = 0, the other = -1 . If either is positive, the other is negative. If either is numerically very large, the other approaches to numerical equality with it, but is of opposite sign. These relations are important in the theory of international trade because, if e_d be the elasticity of England's demand for foreign goods, ϵ_s is the elasticity of England's supply of English goods to foreigners.¹

¹ Cf. my *Study in Public Finance*, p. 204.

- (8) Since $e_d = -\epsilon_d$ and $e_s = -\epsilon_s$, whatever is true of e_d is also true of $-\epsilon_d$, and whatever is true of e_s is also true of $-\epsilon_s$.

8. Since the six functions for A set out in section 3 are merely six different ways of describing the same attitude, the relations between the symbols are necessarily such that the results of any calculations involving them are the same whether one or another of them, or indeed the more complex general expressions of section 2, from which they all derive, is employed; and the same thing is, of course, true of B. It follows that the quantity of A work and the quantity of B work exchanged against one another, and so, of course, also the rate of interchange, can be determined in conditions of competition (which implies, of course, that A and B are groups, not isolated individuals), by setting any one of the six functions representing A's attitude against any one of the six functions representing B's attitude. The selection of the functions to use is a matter, not of principle, but of convenience. Obviously 36 different arrangements are possible. Some of them, however, are so clearly inconvenient that they need not be seriously considered. Thus we can rule out at once all arrangements in which A's function relates together elements different from those that B's function relates; e.g. an arrangement in which A's function relates x_a to x_b and B's x_a to $\frac{x_a}{x_b}$. This leaves twelve arrangements. Arrangements that assign to A one rôle and to B a second are obviously of the same type as arrangements that assign the second rôle to A and the first to B; and arrangements that involve $\frac{x_a}{x_b}$ are of the same type as those that involve $\frac{x_b}{x_a}$. Hence, for bringing together the influences relevant to any process of exchange there are available six types of arrangement: (1) a quantity demand-supply function on each side, (2) a quantity supply-demand function on each side, (3) a quantity demand-supply function on one

side and a quantity supply-demand function on the other, (4) a price demand-supply function on each side, (5) a price supply-demand function on each side, (6) a price demand-supply function on one side and a price supply-demand function on the other.

9. For an isolated community, where there are only two groups dealing with one another in respect of one another's work, there can be no reason for employing one sort of formulation for A's attitude and a different one for B's. Indeed it is undesirable to do this; for, if it is done, an asymmetry is suggested which does not in fact exist. Hence, it would seem, we should employ for both A and B either quantity demand-supply equations or quantity supply-demand equations or price demand-supply equations or price supply-demand equations. When, however, it is desired to employ geometrical constructions for the purpose of bringing the attitudes of sellers and buyers into a pictorial relation, it is obviously necessary that the thing measured along the axis of x (and similarly that measured along the axis of y) shall be the same thing for the two parties. It is useless to bring together a curve for A in which quantities of B's work are measured along the axis of x and a curve for B in which quantities of A's work are so measured. We must, therefore, decide in an arbitrary manner that, for both A and B, either quantities of A work or quantities of B work shall be measured along the axis of x . If our treatment of A and B is to be symmetrical in the sense that, for both, the independent variable shall be measured along the same axis, this implies that one of the curves is a demand-supply curve, as defined in section 3, and the other a supply-demand curve. We cannot practically work with reciprocal demand-supply curves or reciprocal supply-demand curves, only with a demand-supply curve on one side and a supply-demand curve on the other. This is true equally whether we are dealing with quantity functions or with price functions. In an important group of problems connected with tax incidence a fallacy will be committed if

symmetry in respect of elasticity for related demand-supply functions is taken to imply a like symmetry when, for purposes of geometrical analysis, one of these functions is transformed into a supply-demand function.

10. To avoid a possible misconception reference may be made here to the fact that, generally speaking, the members of any group desire, not the work of other groups, but the products of that work. Thus the supply-demand function appears in practice as a supply-demand function of product, being derived from the supply-demand function of work in conjunction with the technical efficiency of that work. When this fact is borne in mind it becomes obvious that movements in the ratio of interchange between A's product and B's product adverse to A may imply either a loss or a gain to A according to the nature of the underlying cause that brings them about. If the root cause is an improvement in A's technical efficiency, a unit of A's stuff will buy less of B's stuff than before, but, unless B's demand for A's stuff has an elasticity less than unity, a unit of A's work will buy more of B's stuff than before. It should be added that, if the fundamental thing that has happened has been an improvement in B's technical efficiency, a resultant worsening in the terms of interchange between A's *work* and B's *work* is associated with an improvement in the ratio of interchange between A's work and B's stuff, and so implies a gain to A. Caution must, therefore, be exercised in drawing inferences as to the effect on any group's well-being of alterations in various sorts of ratios of interchange between it and other groups.

11. Let us now bring into account the fact that each group trades, not with one group only, but with a number of groups. For simplicity let us still suppose that no group "consumes" any of its own work. As before, let x_a be the quantity of A's work, x_b the quantity of B's, x_c the quantity of C's; but now let $x_{a(b)}$ be the quantity of A's work that goes to B; $x_{a(c)}$ the quantity that goes to C; $x_{b(a)}$ the quantity of B's work that goes to A; $x_{b(c)}$ the quantity that goes to C, and so on. Thus

$$x_a = x_{a(b)} + x_{a(c)} + x_{a(d)} + \dots$$

$$x_b = x_{b(a)} + x_{b(c)} + x_{b(d)} + \dots$$

$$x_c = x_{c(a)} + x_{c(b)} + x_{c(d)} + \dots$$

There emerge then, for A, the equations

$$(1) \quad \frac{\partial \phi_a \{x_{b(a)}, x_{c(a)}, x_{d(a)} \dots\}}{\partial x_{b(a)}} \div \frac{dF_a(x_a)}{dx_a} = \frac{x_{a(b)}}{x_{b(a)}}$$

$$(2) \quad \frac{\partial \phi_a \{x_{b(a)}, x_{c(a)}, x_{d(a)} \dots\}}{\partial x_{c(a)}} \div \frac{dF_a(x_a)}{dx_a} = \frac{x_{a(c)}}{x_{c(a)}}$$

and so on; and similarly constructed equations emerge for B, C, etc.

These equations, it will be observed, allow for the fact that the desire of A for any r th unit of the work of B may depend, not only on the magnitude of r , but also on the quantity of the work of C, D, and so on that A is obtaining; whether a holding of C's or D's work enhances or diminishes the attractions of a given holding of B's. The equations, however, fall short of the complexities of real life in that they do *not* allow for the fact that A's desire for B's work may also depend in part upon how much of B's work people other than himself are holding, as happens, for example, with consumers of top-hats and of diamonds.

If we postulate that A's (and also B's and C's) desire for each several sort of work is independent of his own holdings of the other sort, the equations become

$$(1) \quad \frac{d\phi_a(x_{b(a)})}{dx_{b(a)}} \div \frac{dF_a(x_a)}{dx_a} = \frac{x_{a(b)}}{x_{b(a)}}$$

$$(2) \quad \frac{d\phi_a(x_{c(a)})}{dx_{c(a)}} \div \frac{dF_a(x_a)}{dx_a} = \frac{x_{a(c)}}{x_{c(a)}}$$

and so on.

In conditions which imply that the price of each sort of work in terms of any other sort of work is the same for all groups, the number of equations and the number

of unknowns are obviously equal: so that the state of the system is determined.

12. Let us next (ignoring, for simplicity, cases other than the last) introduce the mechanism of money and suppose that A sells his work per year for a certain money income M to B and buys other people's work with this money income. Then, where the trade is between two groups only, we have no longer two functions, but four: namely—

- (1) A's offer of his work against money.
- (2) A's offer of money against B's work.
- (3) B's offer of his work against money.
- (4) B's offer of money against A's work.

Algebraically the functions relevant to A (under the simplified form of the equations set out above) may be written, m_a being quantity of money income accruing to A—

$$(1) \quad \frac{dU_a}{dx_a} \div \frac{dU_a}{dm_a} = \frac{m_a}{x_a}$$

$$(2) \quad \frac{dU_a}{dx_b} \div \frac{dU_a}{dm_a} = \frac{m_a}{x_b}$$

The former of these it is customary to call the supply function of A's work, the latter A's demand function for B's work. Obviously $\frac{m_a}{x_a}$ is the price in money per unit

that A requires for x_a units of his work: and $\frac{m_a}{x_b}$ the price in money per unit that he offers for x_b units of B's work. B's demand-supply function may in like manner be split up into supply and demand functions of exactly analogous form. In the more complicated case of n groups there is for each group one supply function and $(n - 1)$ demand functions. A's supply function is

$$\frac{dU_a}{dx_a} \div \frac{dU_a}{dm_a} = \frac{m_a}{x_a} \quad . \quad . \quad . \quad (I)$$

and A's demand functions are

$$\frac{dU_a}{dx_{b(a)}} \div \frac{dU_a}{dm_a} = \frac{m_{a(b)}}{x_{b(a)}} \quad \dots \quad (II)$$

$$\frac{dU_a}{dx_{c(a)}} \div \frac{dU_a}{dm_c} = \frac{m_{a(c)}}{x_{c(a)}}$$

and so on.

For B, C, etc. the analogous fundamental demand-supply functions may be split into supply and demand functions in an exactly similar manner. In the several resulting sets of equations there are obviously an aggregate of n^2 symbols embodying x and also n^2 embodying m : namely $2n^2$ altogether. Against this there are n supply equations, $n(n-1)$ demand equations, $n(n-1)$ price equations, and $(n-1)$ equations of the form $m_a = m_{a(b)} + m_{a(c)} + \dots$ that is to say, $(2n^2 - 1)$ equations altogether. This is sufficient to determine the unknowns provided that, and only provided that, $[m_a + m_b + \dots]$, *i.e.* the totality of money incomes, is given, and equality between the number of equations and the number of unknowns thereby established.

13. It will be recalled that throughout the foregoing analysis we have supposed each group to deal with other groups by exchange of its work against their work and to have no means of purchasing the work of other groups except by furnishing to them work of its own. In real life, of course, some groups have incomes that accrue to them in whole or in part otherwise than as payment for work done by them. If any group lives wholly on "private means" and refuses in any circumstances to do any work whatever, it is obvious that some of the equations utilised in our discussion break down and a corresponding number of unknowns disappear. If any group lives in part on private means but in part also on the proceeds of its work, none of the equations break down and none of the unknowns disappear, but some of the equations need to be slightly modified.

PART II

By D. H. ROBERTSON

“Alice knew which was which in a moment, because one of them had ‘DUM’ embroidered on his collar, and the other ‘DEE.’ ‘I suppose they’ve each got ‘TWEEDLE’ round at the back of the collar,’ she said to herself.”—*Through the Looking-Glass*.

I

THEORIES OF BANKING POLICY¹

I THINK our chairman will bear me out that one cannot set up, even in the most modest way, as a writer on monetary affairs, without becoming the target for a continuous stream of documents—manuscript, typed and printed—designed to show that the ills of the human race are all due to monetary mismanagement, and all curable by monetary manipulation. In the back streets of London suburbs and northern industrial towns, on the plains of India and the prairies of the Middle West, those who have Found the Light about Money take up their pens and write, with a conviction, a persistence and a devotion otherwise only found among the disciples of a new religion. It is easy to scoff at these productions: it is not so easy always to see exactly where they go wrong. It is natural that practical bankers, vaguely conscious that the projects of monetary cranks are dangerous to society, should cling in self-defence to the solid rock, or what they believe to be so, of tradition and accepted practice. But it is not open to the detached

¹ A lecture delivered at the London School of Economics and Political Science on February 13th, 1928, and published in *Economica*, June, 1928. One or two passages from this lecture have been incorporated in my book *Money* (Nisbet & Co., 1928).

student of economics to take refuge from dangerous innovation in blind conservatism. He must assess with an equal eye the projects of reformers and the claims of the established order; and to this end he must build up for himself a theory of money—a critical analysis of the nature and results of the processes by which, under a modern system of banking, money is manufactured.

Obviously, I cannot put a complete theory of money before you in an hour. My aim is the more modest one of making a critical comparison, from certain limited and selected points of view, between three broad principles which have been advocated, at one time and in one quarter or another, as the proper basis of a modern banking policy. I shall call these principles, for brevity, the Gold Standard Principle, the Principle of Productive Credit, and the Principle of Price Stabilisation. But before I can examine them, I shall have to build up a rather elaborate scaffolding; and it follows that both the comparison itself and the argument that leads up to it will have to be skimped and bony and inadequate. I shall have to simplify and select and dogmatise—to suppress important complications and to eschew tempting controversies. I shall trouble you with few figures, though I shall make some illustrative references to a topic which is rightly attracting more and more attention in this country—the achievements, and not less the difficulties, of the Federal Reserve Banking System of the United States. Nor shall I make any but the most sparing use of even the elementary mathematics of which alone I am capable—though the chairman, under pressure, has permitted me two simple equations, which at the critical moment I shall inscribe on that board. Again, even at the risk of blurring the clear edge of thought, I shall eschew the use of certain strange and barbarous language for employing which elsewhere I have been severely taken to task.

My main preliminary propositions are five in number, but some of them are subject to qualifications almost as important as themselves: so that it is up a pyramid of

eight steps that I must try to conduct you if we are to reach a secure platform from which to take our hurried survey of the three selected principles of banking policy.

I do not think my *first proposition* need delay us long, provided we are prepared to forgo the delight of quibbling about words. It is that the preponderant form of money in the countries which it is most profitable for us to study consists in bank deposits subject to cheque: and that for the most fundamental purposes of monetary theory, we can, without serious risk of error, speak as though these deposits were the *only* form of money, ignoring the existence of paper notes and metal coins.

My *second proposition* is the time-worn one that this bank-money comes into existence mainly as the result of loans and investments made by the banking system, and that consequently, in most circumstances, the proximate force determining its amount is a series of decisions made by some person or persons situated within the banking system. Historically, there seems to me no question that the bulk of the bank-money in existence has come into existence in this way. Even, for instance, if we ignore the war-period, the main reason why in the previous half-century the supplies of bank-money in England increased some $2\frac{1}{2}$ times was not because individuals were carting cash into the banks, but because, owing to amalgamation, owing to the perfection of clearing-house arrangements, owing to the importation of gold, the banking system found itself enabled, consistently with its principles, to expand its loans and investments to a corresponding extent. I should not have thought it worth while to assert this truism in the shape of a formal proposition, were it not that a widespread feeling among bankers that they are being "got at" in some way by orthodox teaching on this matter has induced even so eminent an authority as the late Walter Leaf to use language which is cloudy and misleading. If anybody retains any lingering doubts on this matter, whether these doubts arise from consideration of the multiplicity of banks or from some less

rational cause, I commend to him the careful and patient article of Mr. Crick on The Genesis of Bank Deposits in *Economica*, June 1927. Here time forces me to treat this particular controversy as closed.

But there is *one important qualification* to be made. I should admit, and indeed insist, that while a banking system can always prevent the quantity of bank-money from rising *above* any assigned limit, there may arise conditions of falling prices and failing confidence in which it is exceedingly difficult for it, without the help of allies, and without a revolution in banking practice, to prevent the volume of bank-money from falling *below* some assigned limit. The reason for this is that banks create money predominantly by way of loan: and just as the White King required two messengers, one to fetch and one to carry, so custom requires two parties in a loan transaction—one to lend and one to borrow. It is arguable that the Federal Reserve System, by the support which it has given in recent years to the practice of instalment-buying, has already inaugurated such a revolution in banking practice as I have in mind: but until we see bankers giving away money with both hands, I personally shall be prepared to admit that the control which a modern banking system can exercise over the volume of money may prove under certain conditions to be incomplete.

My *third proposition* leads us into more difficult country. In the form in which I shall state it first, it is not the complete truth, but a first approximation to the truth. "The real value of a country's bank-money is the same thing as the amount of real savings which the public has put in the past at the disposal of industry through the medium of the banks, and its amount lies in the discretion of the public and not of the banks." The banks determine how much money shall be outstanding, but it is the public which determines, through the habits which it adopts as regards the hoarding and spending of money, what that amount of money shall be worth. And since the balance-sheets of the banks must balance,

it is broadly true that the real value of their industrial assets at any time is governed by the real value which the public is embodying (at that time in its holdings of bank-money. It is presumably some half-perception of this half-truth which leads bankers to make such statements as that "they can only lend what the public has deposited with them."

Once more I must refer you to the recognised authorities—such as Pigou's Essay on the Exchange Value of Legal Tender Money—for an account of the forces which determine the public's habits with regard to the hoarding and spending of money, and determine therefore also the amount of real saving which is so to speak crystallised in its holdings of bank-money at any moment of time. It is more important for me to press on and explain the *two serious qualifications* which reduce my third proposition to the status of a half-truth.

First, there is no question that, for a period of time, the banking system, by creating new money and handing it over to its nominees, can continuously extract from the public more savings than the public spontaneously decides to provide, and can hand the disposal of these savings over to its own nominees. I wish to avoid the ambiguous word inflation, but it is such a process as is commonly called by that name that I have in mind. Rightly analysed, it seems to consist of two elements, which have not in the past been sufficiently distinguished. First, the newly created money in the hands of the banks' nominees is continually pouring on to the markets in competition with the existing money in the hands of the public, raising prices against the public, and depriving it of consumption which it had expected to enjoy. Secondly, this rise of prices entails a diminution in the real value of the public's holdings of money: and it is at least possible that some of them will seek to restore this real value towards its old level, and to that end refrain from consumption to which they are legally entitled, thereby performing an additional act of saving beyond that to which they are actually compelled by the

action of the banks. This additional saving on their part is *in a sense* voluntary: but since they are induced to do it by the consequences of the previous action of the banks, we may fairly include it for our purposes under the general term of "forced savings," which I propose to apply to the resources diverted in this way from the general consumer to the nominees of the banks.

At the close of such a period of forced saving, it may quite well happen, if the public's habits about saving have not permanently altered, that the real value of the outstanding volume of bank-money, and the real value of the industrial assets by which it is balanced in the books of the banks, are exactly what they were before the whole process began. In such a case, our third proposition would lead us to infer that the public had, in the interval, made no contribution of savings through the banks to industry: but such an inference would be entirely false. The mere fact that a bank's balance-sheet balances throws no light on the question whether, in the past—even the quite recent past—the bank has been acting as an intermediary for spontaneous investment or as a burglar. The pious protestations of bankers about "being unable to lend more than has been entrusted to them" seem often to ignore this important point!

The second qualification of my third proposition is equally important, and much less generally understood. While, apart from the cases of compulsion just discussed, the public decides the amount of real savings which it is prepared to put at the disposal of industry through the banks, it needs the co-operation of the banks to make its decision effective. If, in the face of an increased willingness on the part of the public to perform this particular kind of saving, the banks fail to take appropriate action, then the potential saving will go to waste. It will be dissipated in the form of lower prices and increased consumption by the public at large. The bank can prevent this undesigned result if, and only if, it makes new loans or investments on a sufficient scale to prevent prices from falling and ensure that the public

really does the saving which it intends to do. By acting in this way the bank is behaving not as a burglar but as a benefactor: it is not imposing unsought burdens on the people, but enabling their thrifty intentions to bear fruit.

In case this matter is not yet clear, consider what actually happens if I decide to save £50 in the form of a bank deposit instead of buying, say, a set of gramophone records. I do not, under modern conditions, carry fifty pound notes into the bank: indeed, it is broadly true that under modern conditions nobody can put anything into a bank that is not there already. (The necessary qualifications to be made in the case of such people as shopkeepers and railway booking clerks will occur to everybody.) The only action which I have to take is the negative one of failing to draw a cheque in favour of the gramophone company. If, as we will assume for the sake of simplicity, the gramophone company banks at the same bank, the only obvious effect of my masterly inactivity on the banker is to absolve him from the need of making an entry in his books. But, in fact, it has a much more far-reaching effect: it enables him to make a new loan of £50 to some worthy trader without producing the price-raising consequences which such a loan *would* entail if I had not decided to put a chain round the neck of my £50 deposit.

If bankers only realised that against additional loans created in such circumstances there is no theoretical objection, they would perhaps be less nervously anxious to deny their ability to "create credit." And it is fair to add that the language of some economists, by failing to distinguish clearly the circumstances in which additional loans are created, has given the bankers some excuse for their nervousness.

But to this olive-branch to the bankers I must hastily append a warning. Conditions such as I have described, in which the public is anxious to increase the amount of its real saving done in monetary form, are very easily confused in practice with conditions in which there is a

tendency for prices to fall, and therefore for the commodity value of the public's money-holdings to rise, for quite a different reason. That reason is a growth in the effectiveness of human labour—an increase in the quantity of goods and services which a day's labour of given quality can turn out. To say that in such circumstances a fall in commodity prices is "natural" is not, I think, as it is sometimes represented to be, a mere retreat into mystical and question-begging language. It is an expression of the truth that if in such circumstances the banks counteract the threatened fall of prices by expanding the supply of money, they *will* be extracting forced savings from the public no less than if, in normal circumstances, they expand the supply of money in such wise as to drive prices upwards. This distinction between a fall in prices due to increased productivity, and a fall in prices due to an increased desire on the part of the public to perform monetary saving, is, I think, of the highest importance for a right theory of banking policy: and it is not the less important because the two phenomena may be exceedingly difficult to disentangle in the actual world.

My *fourth proposition* is a rather complicated one, and I shall break it up into a lot of little sentences. The first part takes us away for a moment from the banks altogether, and bears on the nature of industrial capital. The real circulating capital of a country at any moment of time consists in the whole mass of goods, from the seed-corn in the ground to the loaf in the baker's shop, which at that moment are at some point on their journey through the process of production. This process of production consists in the gradual addition of saleableness to goods by the exercise of human effort and ingenuity. The value of the circulating capital bears a certain definite relation to the length of time over which this process of production is spread: and so as not to indulge in too great refinement or use symbols where figures can be made to serve, we may say that the circulating capital is equal in value to one-half the output during a period of production. If, for instance, we conceive of the

process of production as a vast sausage-machine which it takes ten minutes to traverse, and which turns out one sausage per minute, one of the potential sausages in the machine will have been there for nine minutes and one only for one: but on the average they will have been there for five minutes, and their average value is that which is conveyed by five minutes' laceration, *i.e.* the value of half a completed sausage. The aggregate value of the ten amorphous objects is therefore that of five completed sausages, that is, of five minutes' output.

Now some of this circulating capital has been built up out of the savings made by business men and corporations themselves, or borrowed by them directly from the public: while some of it has been built up out of savings put at their disposal by the banks. Again, some of the real savings which the public puts at the disposal of the banks have been crystallised in this circulating capital, while some have been crystallised in the form of bricks and mortar, machinery and gold reserves, and some again have been embodied in the form of shells long since fired and mules long since deceased.

Now we come at last to my terrible equations, which I will first write up in all their naked horror, and then attempt to clothe with life.

When the industrial and banking systems are in equilibrium,

$$\begin{aligned} aKR &= bC \\ C &= \frac{1}{2} DR \\ \therefore aK &= \frac{1}{2} bD \end{aligned}$$

R is the community's real annual income in terms of goods.

K is the proportion of this income over which the public wish to keep command in the form of bank-money, so that KR = the real value of the aggregate of bank deposits.¹

¹ In view of the criticisms advanced against this mode of statement by Keynes (*Treatise on Money*, vol. I, p. 232) it is as well to make it plain that while the magnitude KR can always be *expressed* as a fraction of R, it is not necessarily *determined upon* with reference only to the size of R [1931].

a is the proportion of KR which the banks have crystallised in the form of circulating capital as contrasted with instrumental capital, bank premises, Government debt and reserves.

C is the circulating capital, b the proportion of C which has been built up with the aid of the banks as contrasted with that supplied by the business world itself or by direct public subscription.

D is the proportion of a year which is covered by a period of production, so that DR is the real income or output during a period of production.

Then these two equations follow from our preceding discussion. As a rough approximation, we may guess that both for England and U.S.A., $D = 1$, $a = b = K = \frac{1}{2}$.

I now reach the climax of this part of my discussion. Provided there is no change in the relative magnitudes of the proportions a and b , or in those of the proportions K and D, a uniform rate of growth in population and output can be sustained without rupture of equilibrium. But to this end it is necessary that the banking system shall add to the supplies of bank money at the same rate.² Once more, therefore, in the case of the normal processes of progress as in the case of an increase in the desire of the average member of the public to perform

² This matter is explained, clumsily but at length, in my *Banking Policy and the Price Level*, pp. 66-70, and more briefly in *Money* (1928) ch. V, §§ 5, 8. So far as I can see, though some have tried to persuade me otherwise, it is for a constant *arithmetic* rate of growth of population that my equation is valid. Put broadly, provided that $aK = \frac{1}{2}bD$, the batch of new workers drawn into employment in a production-period D_1 are to be conceived of as doing, sooner or later, enough monetary saving to justify the banking-system in financing the drawing into employment of an equal batch of workers in some subsequent production-period D_2 . To maintain equilibrium with a constant *geometrical* rate of growth, we must, I think, have $aK = \frac{1}{2}bD(1+x)$, where x is the rate of growth of population per production period. But I wish the whole matter could be explored thoroughly and carried much further by an expert mathematician (cf. the suggestive remarks of Mr. R. W. Souter, "Equilibrium Economics," *Quarterly Journal of Economics*, Nov. 1930, p. 90). [1931.]

monetary saving, the creation of additional money by the banks is seen to be not merely blameless, but a positive duty.

My *fifth and last proposition* concerns occasions when this even rate of growth is interrupted. If for any reason the rate of industrial growth is accelerated, and still more if industry is passing through the first phases of recovery from deep depression, the various factors in our equations are thrown out of gear. First, it is of the essence of Circulating Capital that it must begin to grow *before* the rate of output grows, and *a fortiori*, therefore, before the new real saving in monetary form which the new output facilitates is done. Secondly, there is a strong tendency for the proportion b to grow—that is to say, a strong tendency on the part of the business world to urge that an abnormally large fraction of the new Circulating Capital required should be provided with the aid of the banks. The first occurrence is, so far as I can see, a physical necessity. The second is dependent on business habit and banking policy. The effect of the first occurrence, in terms of our equations, is to make $C =$ something more than $\frac{1}{2} DR$, and the effect of the two combined is to make bC considerably more than aKR . The resulting disequilibrium involves the imposition of forced saving on the public by the banking system and a rise in the price-level.

The condition of strain thus set up is what is known as a trade-boom. I must resist the temptation to describe even in outline the various secondary factors by which the strain is aggravated and prolonged, or the various expedients—some real, but some only illusory—to which the banking system may have recourse to tempt the public into economy and so mitigate the element of compulsion in the burden which is placed upon them. The bare bones of the analysis already in our hands are sufficient for my purpose of a broad comparison of banking policies.

For that, our main task, we have none too much time; but it will, I think, be good economy to use a little of

what remains in a brief recapitulation of the steps we have already taken. First, we decided that to elucidate that part of the theory of money which concerns us to-night, we can concentrate our attention on bank deposits. Secondly, we decided that the magnitude of these bank deposits lies mainly within the discretion of the banking system, though it is not certain that in all conceivable circumstances the system will find it easy to create as much of them as it might have reason for desiring to create. Thirdly, the real value of these bank deposits, which must balance the real value of bank assets held against them, lies within the discretion of the public and not of the banking system; so that there is a broad apparent correspondence at any time between the amount of saving which the public has been willing to do in monetary form and the power of the banks to assist industry and trade. But there are two things which make this correspondence more apparent than real: the first is the power of the banks to extract forced savings from the public over a period of time by the creation of new money, without impairing that apparent equilibrium between saving and investment which is suggested by the fact that their balance-sheet balances. The second is the possibility that the banks, by failing to create *sufficient* new money, will permit individuals to increase the real value of their bank balances without transforming this new saving into new real industrial assets—a process which, again, will leave no trace of disharmony in the balance-sheet.

Our fourth step led us through an analysis of the purposes to which the banking system devotes its resources to the conclusion that a uniform expansion of population and production calls for a uniform expansion of bank deposits, and that such an expansion involves no fraud upon the public. But our fifth step led us to the conclusion that an exceptionally rapid rate of industrial growth *does* throw the relation between the banking system and the public on the one hand and the race of industrial borrowers on the other out of equilibrium, and set up

a strong tendency to the extraction of forced saving from the public.

We come now at last to our three alternative principles of banking policy. I do not, as I have said, propose to examine them from every possible point of view, but only to ask about each of them three questions, suggested by the course of my previous analysis. First, can it be relied upon not wantonly to extort forced savings from the public? Secondly, can it be relied upon efficiently to transmute all real saving offered to it by the public into industrial capital? Thirdly, is it likely to respond readily to the genuine requirements of industry for exceptional supplies of savings in exceptional circumstances?

(1) Let us take first the Gold Standard Principle, by which I mean the principle of banking as understood in England before the war. Let me admit at once that a good deal of what I have to say is not applicable without qualification to the present day, when gold is passing more and more into the position of a Merovingian monarch, with Governors Norman, Strong, and Schacht as joint Mayors of the Palace. But from a theoretical point of view the pure pre-war system is still worth considering. From our present standpoint its distinguishing features were two. The first was its pre-occupation with its legal tender—that is, ultimately, of its gold—reserves, which made the rate at which it created new money depend on accidental circumstances, and not on either of the two fundamental underlying realities—namely, the rate at which the public is willing to perform new saving in monetary form, and the rate at which the requirements of industry and trade for circulating capital are increasing. Hence it might occur, and it did occur, that owing to a heavy production and import of gold, the supplies of money were increased, regardless of the power of industry to make fruitful use at the moment of the resources thrust into its hands, and regardless of the burden imposed by rising prices upon ordinary folk. Or, again, it might occur, and it did

occur, that owing to a shortage of gold reserves, the rate of increase of industrial output was retarded, though everything might be ripe for an industrial expansion and though the public might be bubbling over with the desire and intention to save and to put its savings, if only it knew how, at the disposal of traders and manufacturers through the medium of the banking system. That is the essence of the case, now hardly disputed, against the uncontrolled gold standard.

The second feature of "gold standard banking" is the preoccupation of the banker with the "liquidity" of his assets, in the sense of the ready convertibility of them (or of the collateral by which they are protected) into what he calls cash, as contrasted with their "liquidity" in the sense of the extent to which they represent consumable goods rapidly approaching their final goal in the consumer's hands. I do not want to overstress this point. No doubt, as Mr. Leaf has told us, the six months or seasonal loan is the backbone of the banker's business, and a further part of his resources is embodied, directly or indirectly, in rapidly maturing bills of exchange. No doubt his desire that his loans shall be fairly regularly and frequently paid off works in the same direction as a rule that his resources shall be employed for preference in the building up of circulating capital. Nevertheless, bankers are never tired of telling us that provided they are satisfied with the credit standing of their borrower, it is not their business to inquire too closely into the purposes for which he uses his loan. The revelation by Lloyds Bank in 1927 that no less than 25 per cent. of its advances—as large a sum as went to agriculture, retail trade, the coal trade and the iron and steel trades put together—came under the heading "personal and professional," while its interpretation is not altogether clear, must have come, I think, as a surprise to many. There is, so far as I can see, no guarantee in the principles of banking as understood in England, that the resources entrusted to the banks will not, under certain conditions, be used to an undesirable extent in building up fixed as

contrasted with circulating capital, or in facilitating "speculation" in the sense of that ambiguous word which implies that the natural forward flow of goods on to the market is being impeded rather than promoted.

(2) The alternative Principle of Productive Credit presents at first sight a gratifying contrast. This principle claims our attention for several reasons. First, it was openly proclaimed by the Federal Reserve Board in their celebrated Report for 1923 as being the guiding principle of their policy. Secondly, its assumptions seem to lie behind the provisions—found not only in the Federal Reserve Act but in the charters of many of the Central Banks founded in recent years on the American model—which prescribe the nature of the assets which the Central Bank is to keep against its note and deposit liabilities. Thirdly, it seems to embody a sentiment which is very widely entertained among traders and manufacturers as to what they have a right to expect the banking system to do for them.

"The Federal Reserve System," says the Report for 1923, "is a system of productive credit. It is not a system of credit for either investment or speculative purposes." I have no time to examine with you in detail how far this principle is embodied, and how far it is deserted, in the actual regulations of the Federal Reserve System. I must press on to the implications which lie behind this theory of productive credit. They seem to be nothing less than this—that every person who can show reason to suppose that he is going to be able to sell £100 worth of goods within some reasonable space of time should be entitled to borrow £100 from the bank. And what *this* amounts to is the doctrine that the trader and the producer are entitled to depend on the bank for the whole of their supplies of circulating capital.

This doctrine is naturally very acceptable to the business world. Judged by the test of what is called "elasticity" and "responsiveness to the needs of trade," the principle of productive credit passes with very high

honours. Its appeal to the tribunal of real activities and real values seems at first sight to give it an immense theoretical superiority over the rigid and mechanical illogicality of the gold standard principle. Yet can we be sure that it is really free from all the defects of the latter or from subtle dangers of its own? Is not the boasted elasticity and responsiveness a doubtful virtue? Do we really want our banking system to be a mere passive punch-ball for the pugilists of industry and trade?

"It is the belief of the Board," says the Report of 1923, "that there will be little danger that the credit created and contributed by the Federal Reserve Banks will be in excessive volume if restricted to productive uses." I am not sure, as I shall explain presently, that this view has been borne out by events: but even if it has, it may be conjectured that this result has been due rather to a happy combination of practical judgment and exceptionally favourable circumstances than to a correct theoretical basis. In other circumstances there seems no guarantee that the doctrine of productive credit may not lead to the extraction of forced savings from the public. For consider, in the light of our equation, what it means. Take a banking system which is in equilibrium with $aK = \frac{1}{2}bD$, and apply the doctrine of productive credit. What this means is that for all future increments of production, the fraction b is to be raised to 1. Unless some countervailing change is made in one or more of the other factors a , K and D , the conditions leading to the extraction of forced savings are present.

To put the same point in looser but perhaps more vivid language. The notion common to the American theory of 1923 and to a great deal of much less solid and respectable propaganda—indeed to 90 per cent. of the writings of monetary cranks, is that every batch of goods is entitled to be born with a monetary label of equivalent value round its neck, and to carry it round its neck until it dies. This notion is false and may be dangerous, because the label in fact does not remain tied round the

neck of the goods, but goes off on a round of visits of its own. Nine out of ten advocates of "elastic" monetary systems neglect that phenomenon called the velocity of circulation of money which is epitomised in our symbol K ; and not even the remaining one is aware of the danger of neglecting the numerical relation between this phenomenon and that independent but equally fundamental phenomenon, the period of production of goods, which is epitomised in our symbol D .

It is quite true that there has been no undesirable rise of prices in the United States. Indeed, as is well known, the danger there has been of a precisely opposite character. That brings me to my second count against the principle of Productive Credit—that, if rigidly applied, it may in certain circumstances fail to transmute the thrifty intentions of the people into effective industrial savings. The power and desire of the American people to save has shown itself in many forms in recent years, and among others in an increased desire to leave their bank deposits untouched for considerable periods. While in the five and a half years between March 8th, 1922, and September 7th, 1927, the demand deposits in the "reporting member banks" of the Federal Reserve System increased by 29 per cent. the time deposits increased by 102 per cent. A corresponding change has come over the assets of the banks. Between the same dates the investments of reporting member banks increased by 63 per cent., loans secured by stock or bonds by 71 per cent., all other loans only by 18 per cent. These figures must be interpreted with caution, but it is undisputed that during the last few years the resources of the American banks have been used to a greatly increased extent in the provision of fixed as compared with circulating capital. On the principles of productive credit, this is very shocking: but the wary empiricists who run the Federal Reserve System have been too wise to be very deeply shocked. After all, if K is increasing, what more natural than to preserve equilibrium by a corresponding reduction in a ?

(3) And so we hear less nowadays of productive credit and more of stabilisation of the price-level. The high priests of the Federal Reserve System show indeed a natural anxiety not to commit themselves too deeply in this matter—partly, it would seem, because they doubt the ability of the average middle western farmer to keep clearly in his mind the distinction between the general price-level and the price of wheat. Perhaps they may even have been a little embarrassed by Mr. McKenna's recent unqualified assertion of their omnipotence in this respect. Nevertheless, a perusal of the exceedingly able and interesting evidence given by Governor Strong before the Financial Committee of the House of Representatives leaves, I think, little doubt that the conception of the stability of general prices plays at least a very important part in shaping his thoughts and plans. And it is well known that in England a number of eminent experts have been for years proclaiming the stabilisation of the price-level as the sole and sufficient objective of banking policy. Let us, therefore, in conclusion, direct our thoughts to the Principle of Price Stabilisation. Obviously we have no time to consider it from all the possible points of view. We must be content to ask about it our three selected questions—and one more, perhaps more searching still.

First, does it effectively debar the extraction of forced savings from the public? Yes, in most circumstances—but not in all. In America, factory output per head is said to have increased by 40 per cent. between 1919 and 1925; and though, of course, this figure does not correctly represent the growth in productivity per head for the population as a whole, there is no reason to doubt that this latter has been very considerable. I have already argued that it is by no means meaningless to say that in such conditions there is a natural tendency for general prices to fall, and that to keep them from falling is "inflationary" in the sense that it is extracting forced savings from the public. The Federal Reserve authorities have not, I think, been blind to this aspect

of the situation. It is significant that the index-number of prices calculated for use in the New York Federal Reserve Bank is heavily weighted with the prices of retail goods and of labour, and does not therefore show the same tendency to fall as a result of increased productivity per head as does an index-number of wholesale prices. Nevertheless, in so far as the Federal System has not gone all out for stabilising the price of *labour*, it cannot, I think, be wholly absolved from the charge of having burgled from the public in these years of rapidly advancing productivity. From one point of view the generous financing of instalment-buying, of which I shall have more to say in a moment, may be regarded as an attempt to sell back to the public with the left hand a purchasing power which is being filched from them with the right.

Does price-stabilisation ensure the transmutation into industrial capital of every genuine increase in the capacity and desire to save? Yes; from this point of view it gets, so far as I can see, full marks. Does it do all that it ought to do to furnish industry with the material means for taking those discontinuous leaps to a higher level of activity which, whatever their inconveniences, have hitherto seemed to be an inseparable part of the phenomenon of industrial progress? Well, here I have my own private heresy. I am not sure that a little forced saving now and again may not be the necessary price which we have to pay for what we call progress, and that a doctrinaire application of the principle of price-stabilisation in all circumstances might not be inimical to the rapid growth of aggregate economic welfare. But I do not wish, even if there were time, to develop that theme to-night. I must hurry on to the last question of all—is the policy of price-stabilisation practicable?

Now once more it would take me another hour to discuss this question adequately, and I must confine myself to pointing out those considerations which arise directly out of my previous analysis. It is true, as I have already said, that it is not quite clear *what* price-

level, if any, the Federal Reserve System has been trying to stabilise, and that the fact that the wholesale price-level in America fell by 10 per cent. between mid-1925 and mid-1927 must not be too readily taken as evidence of its lack of capacity to achieve its ends with complete success. But it is clear, I think, that the situation has not been an easy one. If my interpretation of American conditions is right, there has been at work there an extraordinary concatenation of forces tending to lower the level of commodity prices. Industrial progress has on the one hand raised productivity per head and increased the desire of the people to perform monetary saving: while on the other side of the equation it may be conjectured that it has shortened the period of production and, by increasing the power of businesses to finance extensions of circulating capital for themselves, has diminished the degree to which they need to have recourse to the banks. Under such conditions Governor Strong has been hard put to it to affect the level of commodity prices in an upward direction. He pumps money into circulation, but instead of driving up commodity prices it hangs about the stock markets, driving up the price of industrial securities. Then, as we have seen in the last few weeks, he gets nervous, mops up money by the sale of securities in the open market, and puts up his bank-rate.

There remains one more resource, and that too has been adopted on an enormous scale. When you have pumped into the producer all the money which he will absorb, you can try it on the consumer as well. According to recent estimates, a sum of about £450,000,000, say £4 per head of the population, is now outstanding on loans to consumers for the purchase of motor-cars, saxophones and other desirable commodities. There are many things to be said about this development from the broader social point of view: from our immediate standpoint it is chiefly interesting as a notable, and perhaps somewhat disquieting, oblation upon the altar of price-stabilisation.

And if these things are done in the green tree, what shall be done in the dry? There seems at present no limit to the growth of American business activity: but if that great country *should* ever become even temporarily saturated with 50-storey buildings and motor-cars, can we be certain that *any* purely monetary policy would meet the needs of the situation? In any case can we be certain that the experiences of El Dorado are a safe guide to the policy of less favoured lands? The out-and-out price-stabiliser claims that he can always check a fall in prices and cure unemployment by monetary means, and that there is no need for such fancy palliatives of industrial depression as the deliberate spacing through time of Governmental and other large demands for constructional work. I think the difficulties experienced by the Federal Reserve System even in times of raging prosperity should make us pause before admitting such extreme claims.

It has been my business to examine existing principles of banking policy, and not to elaborate new ones. But to escape the imputation of cowardice, let me suggest in conclusion that the ideal banking policy might be one which was founded on the principle of price-stabilisation as a norm, but which was ready to see the fruits of a prolonged and general increase in individual productivity shared in the form of lower prices, and perhaps to acquiesce in moderate price-rises in order that advantage might be taken of discontinuous leaps in industrial technique. And it would be a policy that did not claim omnipotence, or feel competent of its ability to cure the evils of uncertainty except in alliance with a much more comprehensive attempt to control and stabilise the desires and activities of the community than most monetary reformers—even, I think, most thorough-going Socialists—have yet visualised.

II

THE WORLD SLUMP¹

I PROPOSE to examine, with special reference to existing conditions in Great Britain and to remedies which have been proposed, four sets of conditions which may give rise to the phenomena associated with the phrase "trade depression."

I. *The Glutability of Wants.*

The first is in my view at once the most fundamental, the most difficult to analyse, and the most difficult to counteract. Its explanation involves a preliminary inquiry into the nature and purposes of modern banking. The primary function of a banking system is to place effectively at the disposal of trade and industry that part of the savings of the people which is committed to its care. But incidentally in modern countries it performs another function—the provision of the predominant form of money, in the shape of deposits on which cheques may be drawn. Subject to a qualification to be mentioned presently, I accept as evidently true the doctrine that the volume of this money outstanding lies wholly within the control of the banking system, as a consequence of its power to vary the volume of its loans and investments. It follows that variations in the desire of the public to commit savings to the charge of the banking system express themselves not in variations in the volume of bank deposits, but wholly in variations of the speed with which the title to those deposits changes hands as

¹ A memorandum submitted in April, 1930, to the Macmillan Committee on Finance and Industry, and reprinted here by permission of the Controller of H.M. Stationery Office.

a result of the purchase of goods—whether instrumental goods or goods for immediate consumption. It follows further that in order to discharge perfectly what has been described above as its primary function, a banking system ought to be perfectly free to vary the volume of its loans and investments, and therefore of the money-supply, in response to such changes in the behaviour of the public.

An increased desire of the public to save through the agency of the banking system will show itself in a slowing-down of the movement of deposits and a fall in the "general price-level" of those goods (including new instrumental goods) on which income is spent, beyond what is explicable as a consequence of any technical improvements in production which may be at work. It will call for an expansion of loans and investments on the part of the banking system on such a scale as may be necessary to counteract such an "unnatural" fall in the price-level. If this can be effected, the increased saving committed to the banks will be effectively transformed into industrial capital instead of being dissipated in consumption at unexpectedly low prices or checked by the curtailment of production, and the shrinkage of money incomes (which are derived ultimately from the sale of goods) will be prevented. The primary purpose of the banking system will have been fulfilled, and the tendency to trade depression will have been corrected.

It is obvious at once that a banking system which, owing to its adherence to an international gold system, is tied by rules or conventions regarding the ratio of its cash to its deposits, will not be perfectly free to vary its loans and investments in accordance with the foregoing criterion. I wish, however, to concentrate for the present on the difficulties which might beset even a banking system operating in a closed country, and which seem to me more formidable than are sometimes supposed.

In the first place, even such a banking system would probably be governed by certain conventions with regard to the character of its assets. The matter may be

developed thus. Of the effective savings of the public outstanding at any time, part are embodied in the form of fixed capital—instruments and machines—and part in the form of working capital—goods of all kinds in process of production, transport and storage. Of this working capital a certain proportion—in the case of England about one-half—has been built up with the aid of the banks, the remainder out of the savings made by entrepreneurs themselves or entrusted to them directly by the public. Again, out of the savings entrusted by the public to the banking system, a certain proportion—again, as it happens, in the case of England perhaps one-half—have been embodied in working capital, while the rest are represented by other types of banking assets. Now if the desire of the public to save through the medium of the banking system increases, one of three things must happen in order that equilibrium may be preserved. Either the total volume of working capital must be increased; or the proportion of working capital built up through the aid of the banks must be increased; or the proportion of bank assets represented by fixed as opposed to working capital must be increased.

Even if the increased desire of the public to entrust savings to the banks is fundamentally due, as in America in recent years, to underlying prosperity, the two first alternatives may encounter strong resistances. For one of the *causes* of that prosperity has been a speeding-up of the processes of production and merchanting, enabling a given annual output to be produced and marketed with a smaller pool of working capital: and one of its *consequences* has been an increased power of businesses to finance their own current processes of production without recourse to the banks. Hence it is doubtful whether conditions in some ways analogous to those of "trade depression" could have been prevented from developing in America in 1922-29 had not the banks been prepared to finance the expansion of fixed capital on a largely increased scale.

If the principal cause of the increased desire to entrust

savings to the banks is a failure of confidence and of enterprise, the resistances to a counter-expansion in advances for the provision of working capital are of a different order. The will to initiate new enterprises or to expand old ones may be lacking: in particular, if important branches of industry are entangled in financial disorder and clogged with obsolete plant, as appears to be the case in England to-day, the offer to them of advances for financing current production is apt to resemble the offer of a pair of boots to a man who has no legs. In such circumstances a banking system which is prepared fully to "meet the needs of trade," as those needs have been commonly understood in England, may still be falling far short of what is required of it. For in this case, no less than in the happier case typified by America in 1922-29, what is *prima facie* required is an increased willingness on the part of the banks to find ways and means of financing permanent investment.

I venture to remark in passing that the laudable attempts which have been made by some—alas! only some—of the English banks in recent years to explain and vindicate the character of their loan assets seem to me to have partly failed to appreciate the real nature of the criticism which may be brought against them. Bankers have been much concerned to show that a large proportion of their loans are devoted to "meeting the needs of trade," and only a small proportion to facilitating "financial" transactions or personal extravagance. What, in the peculiar circumstances of the time, they needed to be able to show, was that the overwhelming bulk of their loans were of such a kind that the money created as a result of them was brought easily and actively into touch with commodities, whether of a consumable or an instrumental kind. In a time of trade depression, a stock exchange loan which indirectly facilitates the placing of a new industrial issue—even a loan to an instalment finance company which facilitates the anticipatory purchase of cradles and coffins—is not necessarily anything for a banker to be ashamed of. The real trouble about loans

to Hatry, even had he been honest, would have been not that he was a "financier," but that his ideas of industrial reconstruction did not apparently extend beyond the arrangement of paper transfers and fusions, or comprise an active policy of purchase of tangible new structures or machines.

I am familiar with the arguments annually set out by bank chairmen against the "entanglement" of banking with industry. I do not consider myself qualified to discuss them from the practical point of view; but I earnestly hope that witnesses of greater experience will submit to the Committee suggestions, involving perhaps the formation of consortia on the German plan or of something analogous to the French Credit Mobilier or the Japanese Kogyo Ginko, for grappling with the administrative difficulties entailed. I must confine myself to urging the relevance of two theoretical propositions. (i) On the face of it the question of the proper character of banking assets is not one which can be settled *in vacuo* for all time, independently of the state of industry and of the phase that has been reached in what used to be called the trade cycle. Things that were not proper to do—though it does not apparently follow that they were not done—in 1920 might well be proper to do in 1930, and become improper again in 1935. (ii) The argument that because a bank's deposits are obligations at demand or short notice its assets must be "liquid" seems to rest partly—I do not say wholly—on an obsolete conception of the method by which the public, if so inclined, proceeds to withdraw saving from the banks. There is surely nowadays no serious danger of the public desiring to withdraw deposits on a large scale from the banking system *as a whole* in the shape of legal tender money. But if there is not, then even though each individual deposit were payable on demand, the whole mass of deposits (though their real value may fluctuate with alterations in the spending behaviour of the public and consequently in the price-level) constitutes a mass of monetary obligation almost as fixed and immobile as the

most stagnant type of banking asset. This would be clearly seen if there were only a single deposit-banking corporation: and the desirability that it *should* be seen is, I think, a not negligible argument in favour of the unification of the banking system, presumably under some kind of statutory safeguard. I do not, however, wish to waste the Committee's time by discussing seriously such a proposal—only to urge that so far as the policy of giving long-period assistance to industry is hampered by an exaggerated fear on the part of the existing banks of "losing deposits," something ought to be done by combined action to allay that fear.

I turn now to a more disquieting problem. Is it certain that even in a closed country, even a banking system which took the broadest view of the nature of its permissible assets could overcome unaided a tendency to industrial depression arising from the cause under examination—viz. the failure of private enterprise to absorb spontaneously the increment of saving committed to the charge of the banks? Technically, this question falls into two parts. First, is the doctrine that the volume of deposits lies wholly within the control of the banking system so water-tight that in no circumstances could a banking system, freed from preoccupation about its reserves, fail to create as big a volume of deposits as it thought desirable? Might not even such a banking system fail to make headway against the flood-tide of repayment of loans and the unwillingness of business men to borrow even at very low money rates of interest if prices are falling, and are expected to go on falling, rapidly? I do not feel certain of the answer: when one takes into account that the banking system can expand its assets by way of investment as well as of loan, I concede that the difficulty suggested may be imaginary. I feel more certain about the second part of the story—namely, that the banking system may only be able to expand its assets in ways which do not ensure that the resulting deposits are brought effectively into touch with commodities, and may be unable, therefore, unaided, to stem

a fall or engineer a rise in the commodity price-level. I would appeal to the experience of the Federal Reserve System in the autumn of 1927 in confirmation of this view.

Behind this contention lies a principle of great importance. Among the causes of industrial depression I attach leading importance to the temporary gluttability of large groups of particular human wants. This applies even to consumption goods—most obviously to those, like motor-cars, which are of a semi-durable nature, but also to those, like sugar, which are consumed at a blow. If the production of many types of such goods has been rapidly increased, as in recent years, the absorbent capacity of consumers may be very severely tested. To dish out money through the agency of the banking system may be an inadequate remedy if the purchasing power so obtained is held in the form of a potential command over goods in general instead of being expended on particular goods. And if this is true of consumption goods it is far more, and more devastatingly, true of the instruments of production and the materials of which they are made. A feature of modern industrial progress, partly aggravated by avoidable causes but partly inevitable, is that it proceeds discontinuously—in lumps and by jumps. A railway once built will be capable of serving the needs of a district for a generation, till it becomes time to double the track. Anybody ought to have been able to see in 1920 that the world was so clogged with ships that the shipbuilding industry was in not for two years of depression but for a dozen: and that it would not (to anticipate a little) be a good or sensible use of the Trade Facilities Act to invoke it for the production of new ships.

So far as consumption goods go, the chief remedy seems to be the rather unattractive one of the perpetual stimulation of new wants: certainly the nation that has practised this immoral art with most assiduity is that which has longest postponed the disease of industrial depression. "The National Kraut-packers' Association," I read some time ago, "has made America sauerkraut-

conscious in the short space of two years, thus redeeming the odium on one of God's gifts to mankind, and increasing consumption 20 per cent." There is, however, another palliative which, if the Committee is prepared to consider fairly advanced proposals, ought not, I think, to be ruled out of court off-hand. The saturation of particular wants is not in all or most cases permanent. Time is needed for the organisation of new channels of trade—to cite an instance which has been given, for the popularisation of wheat in the Pacific. Further, on the assumption that depression in the instrumental trades will not continue for ever, an increased flow of consumption goods will be needed for the sustenance of the instrument-makers when they are set to work. It is one of the paradoxes of economics that saving is the one thing that cannot be saved: saving that is allowed to go to waste to-day cannot be utilised to-morrow. But there is nothing inherently ridiculous about the policy of storing such consumable goods as are technically capable of it, in order that, when the time is ripe for a new outburst of constructional activity, the materials of livelihood for those engaged in it may be forthcoming without the need for extracting them from contemporary consumers through the processes of inflation and enforced abstinence. This is the theoretical case for schemes of "valorisation" of raw commodities with the aid of banking systems and of Governments. I am aware that such schemes are exposed to many kinds of practical difficulty and risk. I would only plead that in considering them, regard should be had to two points—first, that in default of them nothing can prevent producers, if they are strong enough, indulging in schemes for the restriction of output which are *prima facie* wasteful and anti-social; secondly, that, as in the analogous case about to be considered, the consideration that such projects may not promise a market rate of interest is not necessarily decisive if the alternative is alternate periods of disorganised production and strangled consumption.

I pass to the better-worn field of instrumental goods.

It has always seemed to me the merest common sense that public bodies, central and local, as well as semi-public bodies such as railway companies, electricity commissioners and so forth, should intervene to organise and express a collective need for instruments and structures—rolling-stock, pylons, lavatories and what not—at times when the ordinary commercial demand for instruments and structures is in a condition of temporary saturation. The doctrine of temporary gluttability which I have tried to outline above is in direct conflict not only with the so-called “Treasury view” that such a policy of promoting public works absorbs resources which would otherwise anyhow be employed by private enterprise, but also with the doctrine, which has been maintained, for instance, by Mr. Hawtrey, that the public works are a “mere piece of ritual,” achieving nothing which could not equally well be achieved by the banking system acting alone, through a sufficiently great alteration in its terms of lending. When the spirit of investment is really costive unto death, I do not feel confident that the most enlightened group of bankers have it in their power to administer a sufficient purge, unless they are backed and utilised by authorities even higher than they. It is to the organised will of communities, expressing itself through the machinery of representative government, that we must say :

“ Now if thou wouldst, when all have given him over,
From death to life thou might'st him yet recover.”

At the present time the need for such a policy seems to me more urgent than in the typical slump of pre-war days, for three reasons. First, with a retarded rate of growth of population and of world-trade, instrument-gluts are liable to last longer than of old: the tail of one depression, so to speak, does not so easily get bitten off by the head of the next boom. Secondly, as a result partly of technical changes, partly of an increased sentiment in favour of the limitation of private profit derived from public utilities, the field of enterprise in which

Government—in the broadest sense—is in any case naturally and inevitably involved has broadened, so that old arguments hinging on the demerits of so-called “relief works” have become largely out of date. Thirdly, a vigorous application of the processes of rationalisation to private industry, while it may expand the demand for certain types of instruments, is almost certain, so far as I can see, to diminish temporarily the demand for labour as a whole. And “temporarily” is in this connection a vague and elastic conception. There is something to be said for the ribald suggestion I have heard that Mr. Thomas should remain as Minister for Throwing People out of Work, Miss Bondfield as Minister for Keeping them out of Work, and that we should now appoint a new Minister for Getting them back to Work again.

Before leaving this part of the subject, I wish to emphasise two points. (1) The root difficulty to which I have tried to draw attention above does not depend primarily, so far as I can see, on our attachment to an international gold standard. It might occur in a country with a closed monetary system, and it may occur in the world as a whole. Nor does it depend primarily, so far as I can see, on the existence of a profit economy. It might occur in a Socialised State, and it might occur in a community of small producers working on their own account, all of whose incomes contracted instantaneously with a fall in price of the commodities which they produced. This is not to say it is not gravely exaggerated if many money incomes are fixed by law or custom in such a way that the brunt of falling prices is concentrated on a limited class of entrepreneur-employers. (2) I have developed my analysis with reference to a trade *depression* alone, so as not to weary the Committee with irrelevant matter. But I think it important to observe that there are probably many people, of a somewhat vocal type, who would agree with my conclusions as to the present need for a forward policy on the part of banks and public authorities, but who would put the case in general terms which I should regard as erroneous, and

the application of which, in other circumstances than the present, I should expect to lead to evil consequences. The doctrine, popular among some schools of monetary reformers, and enshrined at one time in a Report of the Federal Reserve Board, that there is no danger that credit will be issued to excess as long as it is issued only for "productive" purposes, seems to me fallacious. There is no pre-ordained harmony between, on the one hand, the extent to which entrepreneurs will wish to have recourse to the banks for the wherewithal to build up industrial capital—whether capital in general or working capital in particular—and, on the other hand, the extent to which the public will desire to keep its savings crystallised in the form of bank deposits. The doctrine that it is the whole duty of the banking system to respond passively to the alleged "needs of trade" might become, in other circumstances, a potent instrument of inflation and of oppression of the consumer.

II. *The Level of Real Wages.*

If the workpeople in a country demand a real wage in excess of the economic value of their work, economic theory predicts two reactions, one more or less instantaneous, the other more or less delayed. The first is—the general willingness of entrepreneurs to spend money on the hire of labour remaining still unimpaired—a reduction in the numbers who will find work; the second is a lessened willingness on the part of entrepreneurs to provide capital and display enterprise, caused by the shrinkage of profits, and leading in its turn to a further diminution in the numbers who can find employment at the wage insisted upon.

A shrinkage of net profits due to the financing of social services out of high direct taxation will tend to produce the second effect, in a degree which seems impossible to determine except by the method of trial and error: but it will not tend to produce the first, *i.e.* it will not operate as a direct tax on employment. I share, therefore, the

view that it is a less dangerous method of maintaining and advancing the working-class standard of life than a militant wage-policy. Among other things the burden will be shared by the commercial, financial and professional classes who employ little labour, instead of being concentrated on the class of industrial entrepreneurs. I think, however, there has been a tendency among some authorities, particularly the members of the Colwyn Committee on National Debt and Taxation and some of their expert witnesses, to exaggerate the difference between the two methods of procedure.

Insistence on an uneconomically high real wage may come about as a bye-product of the situation discussed in Part I—*i.e.* it may take the form of a maintenance of money wages in the face of a falling price-level; but it may not. Personally I am inclined to attach less importance than some people to the alleged rigidity of *money* wages under all conditions, and more to the increased determination of the working classes, backed by powerful Trade Unions and universal suffrage, to secure under all conditions a handsome share of the *real* income of the country. The difference of emphasis is important both in connection with the existing situation and in connection with certain proposed remedies. (a) The spokesmen of the working classes are justified in pointing out that the cost of living has not fallen in recent years anything like as much as the level of wholesale prices. The reason for this seems to be partly frictions, increasing the incomes of retailers, but partly also the fact that efficiency in distribution cannot be expected to increase as fast as efficiency in extraction and manufacture, so that a natural result of technical progress in agriculture, mining and industry is to increase the proportion of the community's real resources which have to be employed in the processes of merchanting. (I would appeal to the occupational statistics issued annually by the Ministry of Labour in support of this thesis.) The inference is not indeed that the industrial workers are not demanding uneconomically high wages, but that they cannot quite justly be

charged with ignoring changes in commodity prices. (b) If Protection were introduced on a sufficient scale to cause an appreciable rise in the cost of living, I feel little doubt that pressure to raise money-wages would follow at no distant date. In this event the alleged efficacy of Protection as a cure for disequilibrium between prices and wages would prove nugatory.

I find it very difficult to express an opinion as to how far the maintenance of an uneconomically high real wage-level is a *practically* important cause of unemployment in this country to-day (*i.e.* I rule out such speculations as that, if wages fell to a penny a day, we might all employ a dozen coal-miners as body-slaves). If importance is attached to the theory of saturation set forth in Part I, it would follow that the demand for labour in many directions to-day is pretty inelastic, in the sense that considerable wage concessions would not be likely to lead to a great increase in the numbers employed. I suspect that this is true *par excellence* in shipbuilding; that it is true in a less degree of the leading textile trades; and that it is true also, for rather different reasons, in the case of certain "sheltered" industries, notably railways, where the numbers who can find employment are dictated within fairly narrow limits by the size and nature of the fixed plant with which they have to co-operate. I am inclined to think that one effect of rationalisation may be to assimilate industry to transport in this respect—*i.e.* to produce such a close and intimate co-ordination between an elaborate fixed plant and the labour-force required to work it as to leave little room for the operation of what economists call the principle of substitution—little inducement, in other words, to the entrepreneur to take on more hands if the rate of wages falls. A completely rationalised world might turn out to be one in which, if organised so as to obtain their economic worth, a certain proportion of the workpeople could find employment at very high wages, while the remainder could hardly find employment on any terms at all.

For these reasons I should, I think, expect smaller

results on employment from a successful drive against wages, unaccompanied by any other change, than some people would. I should not, however, if I were Minister for Employment, feel justified in refusing an offer by the Trade Union Congress to bring all wages down by 10 per cent.; and if it were accompanied by a vigorous effort to revive the demand for labour by other means, I should hope for appreciable results on the volume of employment.

III. *The Gold Standard.*

A banking system which would otherwise find no insuperable difficulty in transforming into industrial capital all the saving committed to its charge may on occasions be prevented from doing so by the necessity of adhering to rules or conventions about the relation of its deposits to its reserves, which in turn are, or are thought to be, necessitated by its adherence to an international gold standard. So far as difficulties of this kind are connected with foreign investment, I postpone them to Part IV; so far as they are connected with international pressure on the supplies of gold, I proceed to discuss them now.

If the world had reached equilibrium in its gold-using habits, I should be inclined to take a less gloomy view than some economists of the probable gold situation during the next few years. According to the best authorities, the supplies of gold available for monetary use are still increasing at the rate of about 2 per cent. per year—that is, twice as fast as the world's population. If they are increasing less rapidly than the world's production of commodities (*i.e.* if the production of commodities per head is increasing by more than 1 per cent. a year), that is not on the face of it an evident evil. At the same time, according to the same authorities, the annual output of gold from the Rand is likely to diminish rapidly from about 1939. Moreover, there is every reason to fear that a number of European countries have not abandoned the hope of substituting gold on a large scale for foreign

exchange in their banking reserves, and even of restoring a gold circulation. The difficulties of freeing gold in the United States by substituting Federal Reserve Notes for Gold Certificates, and by substituting "eligible paper" for gold in the reserves of the Federal Reserve Banks, seem to be greater than are always appreciated on this side of the Atlantic. In these circumstances I concur with the general body of economic opinion in attaching the highest importance to concerted action among Central Banks to ensure the rational use and distribution of available gold supplies. If I do not enlarge on this subject in proportion to its importance, it is because I feel I have nothing to say which is not likely to have been put before the Committee with great emphasis by other witnesses. As an obvious objective of policy I would mention a concerted move towards the reduction of the present extremely high legal reserve ratios of Central Banks—a move in which we might presumably have to play our part by a relaxation of the law or practice with regard to the fiduciary issue.

There remains the question whether, pending or in the absence of international action, this country can safely take any steps in the relaxation of banking rules. That there remains an element of play in our system, even under an international gold standard, and that that element of play can be used to great advantage, has been, I think, abundantly proved by the authorities of the Bank of England in recent years, and especially in 1929. Could that element of play be advantageously increased? I do not think we can have a gold standard and yet expect to behave as if we had not got one; but I think there is one change at least which deserves the serious consideration of the Committee, and which would be the easier to adopt in that we should not be setting an example of looseness to our neighbours, but only taking a leaf out of their books. In the United States and some other countries, the banks are allowed to keep a substantially smaller proportion of reserves against time than against demand deposits. Thus an increased willingness on the

part of the public to do its saving through the agency of the banks, so far as it manifests itself in an increase of time as compared with demand deposits, automatically frees the banks to expand their loans or investments. If the American rules were applied to the English banks, and if the existing proportion between current and deposit accounts could be maintained, the aggregate deposit liabilities of the banks could be increased by 70 per cent. Of course in existing circumstances that proportion could not be maintained, and I do not suggest that if it could it would be wise or practicable to effect such a sweeping expansion at one blow. But I would press the Committee to consider very seriously whether the principle of differentiation between demand and time deposits ought not to become embodied, whether by law or custom, in our banking practice.

If the Committee are in a mood to consider fairly sweeping proposals, there remains the possibility of altering the English Currency Law in such a way as to bring the gold reserve into connection with the purpose for which it is in fact required, namely, meeting foreign drains, instead of a purpose for which it cannot be required, namely, the cashing of notes. It is difficult to make a specific proposal without knowing more than I know about the composition of the Bank of England's Other Deposits, other than bankers' balances. But for the sake of illustration let us suppose that the law ran that the gold reserve must never fall below twice the bankers' balances. Under the law as it stands, the withdrawal to-day of £60 million of gold for export through the agency of the joint-stock banks would reduce the Bank of England's banking reserve to zero, and necessitate a violent contraction of credit by the joint-stock banks. Under the law that I have suggested, the Bank of England, retaining £100 million of gold, would be able to keep the bankers' balances at £50 million, *i.e.* to reduce them only by £15 millions. Thus a substantial buffer would be provided against the disturbing effect of foreign drains. Yet the sacred principle of proportionate reserves

would be preserved, though in an unfamiliar form; and the hand of the Bank of England would be strengthened in resisting irresponsible pressure to *increase* substantially the basis of credit in consequence of casual increases in its gold holdings.

IV. *Disturbances in the Balance of Payments.*

Under this heading there fall due for discussion a number of matters whose inter-relation is by no means easy to determine.

I share the view that the sums which the inhabitants of a country, taken as a body, desire to invest abroad, and the sums which are at their disposal for investment, as a result of a favourable balance on trading account plus the receipt of interest on past investments, are determined by partially independent forces; so that under a gold standard harmony can only be preserved between them through manipulation by the monetary authority. I say "partially independent," because I also share the view that under ordinary conditions there is a certain natural connection between them. A country which is poor enough to want to borrow is *probably* also simple enough in its economic structure to have a keen demand for foreign specialities. A country which is so highly industrialised as to be constantly seeking new foreign markets in order to exploit the full advantages of large-scale production is *probably* also rich enough to desire to invest heavily abroad. Were such harmony universal,¹ little trouble would be caused to monetary authorities: each country would smoothly and easily get the amount of gold which it deserved, and the level of money incomes ruling in it would accurately reflect its combined position as a trader, a recipient of interest, and a maker of fresh investments. There would be no cause for alarm if the level of money wages and other incomes were found to be

¹ Post-1924 Germany is an admirable illustration of flagrant violation of the rule.

twice as high in England as in (say) Germany, nor any justification for paying attention to the complaint of particular trades which found this fact inconvenient. But a country in which this natural harmony is broken, through an increase in the desire and/or a diminution in the ability to lend abroad, may find itself with an uneconomically high level of domestic prices, including money incomes, as compared with the rest of the world, and may suffer from unemployment until the situation is corrected by an outflow of gold and a contraction of credit and of money incomes.

How far is such a rupture of harmony a cause of England's troubles to-day? There are several points to be discussed.

(1) Is there really evidence that "the English price-level" is 10 per cent. out of equilibrium with "the world price-level"? The difficulty of answering arises from the double difficulty of finding a thing to be called the price-level and a place to be called the world. The dispute over the return to the gold standard in 1925 was conducted by both parties in terms of a comparison between England and America, and at first in terms of wholesale prices. When it became evident that wholesale prices were an inadequate guide, appeal was made to cost-of-living figures, of which unfortunately the two available American series told incompatible tales. But if what we are really interested in is cost of *production*, there is no reason for stopping short at cost of *living*, and we are driven back on *wages*. But wages are notoriously *lower* in England than they are in America. Hence we are driven from America (being careful to avoid Japan, where "internal prices" have ruled far higher than in England) to the continent of Europe, and particularly (skirting Italy and Scandinavia) to France and Belgium. But the low level of gold cost of living and wages in France and Belgium is far more directly the result of what *they* did in 1927-8 than of anything that *we* did in 1925. Further, the whole theory of a 10 per cent. crime in 1924-5 depends on the assumption that "equilibrium"

had been reached in 1923-4. But can it be confidently asserted that the true post-war equilibrium was reached in a year in which, for very good reasons, America was withholding that stream of financial aid to Europe which we surely have some reason for regarding as a "normal" feature of the post-war world? And, finally, who is prepared to say how far the existing relative levels of money-incomes in different countries are "unnatural," and how far they reflect, as they presumably did before the war, the relative pull exercised by those countries on the supplies of gold and other internationally traded goods? For these reasons, even if the scheme for a concerted reduction of British money incomes by 10 per cent. were politically feasible, I am afraid I should feel it was based upon a quicksand.

(2) These reflections lead naturally to another. The terms on which we conduct our trade with the rest of the world seem to have been subjected since the war to two conflicting influences. On the one hand, there has been a relative glut of certain things which we supply, notably coal and shipping services, with the result that we have had to dispose of them on unfavourable terms. On the other hand, there has been a relative glut of many of the things which we buy. The latter force has been on the balance the more powerful, so that while the price of our exports, as recorded by the Board of Trade, is 60 per cent. higher than in 1913, the price of our imports is only 35 per cent. higher. These figures over-estimate the change, for they do not include shipping services among exports, and some of the exports whose price-change is measured have probably improved in quality and intricacy so as to embody larger amounts of British labour and skill. But taking the figures as they stand, they suggest that we are able to obtain, for a given volume of exports, a volume of imports greater by 18 per cent. than in 1913. One way of interpreting this fact is to say that we are trying to exact too high a price for our exports, with the result that we cannot sell as many as we should like. But a more natural way is to say that as a result of the change

we could afford to specialise, a smaller proportion of our productive equipment, and secure the import of the foreign goods and services that we require. For so startling an improvement in the terms of trade is prima facie advantageous to the country in which it occurs. If it could immediately and without loss transfer to other uses the factors of production specialised in the production of goods for export, the change would be unequivocally advantageous. If it cannot, those factors of production will suffer the familiar phenomena of "trade depression"—low profits and falling demand for labour; and it becomes a question of calculation whether to incur the losses of transferring them, or to permit them to continue to work at a lower reward than that which can be obtained in other occupations. If the latter plan is regarded as the lesser evil, it must not be hastily inferred that the level of money incomes in the non-export trades is "too high." To use more familiar language, the level of incomes in the "sheltered" trades may, more faithfully than the level in the "unsheltered" trades, reflect the general level which the country could economically maintain if its productive resources were distributed in a perfectly appropriate manner between making for export and making for home consumption.

Thus in these circumstances the forcing of exports at a sacrifice on an unwilling world is at best a *pis aller*: whether it is the best policy available depends partly on whether the change in the terms of trade which is the cause of all the trouble is likely to be reversed, and what form the reversal will take. Personally, when I first became aware of the situation, I expected that before long it would be reversed; but in fact, after some recovery from the extreme conditions of 1921, it has shown in recent years a remarkable tendency towards stabilisation. Indeed the position in quite recent months has recalled that of 1921; for the world-wide fall in the prices of raw products which has attracted so much attention has been a fall in the things which Englishmen consume rather than in the things which they produce. It is highly

paradoxical that such a development should injure us; but it may nevertheless do so in so far as it reduces the quantity of exports which we need send, return for our imports; in more plain language, in so far as it reduces the power of Australian and other producers of raw products to purchase our goods and so produces dislocation of our export industries. The natural inference would seem to be that we should make a special effort to absorb in useful occupations at home the productive resources which are being rendered superfluous in the export trades. Thus the practical outcome is to strengthen the case for the policy of vigorous home development advocated in Part I of this memorandum.

If at some future time the terms of trade swing against us, it is likely to be as part of a more far-reaching change—namely, a partial closing of those gaps in the comparative capacities of different countries for following different pursuits on which the advantages of international trade depend. If that occurs, it will still be true that England will have to adapt her economy to a smaller volume of export trade than she has been used to in the past—not, as at the present moment, because she is getting her imports so cheaply, but for the less agreeable reason that the circumstances in which it paid the world to let her be its workshop will have partially passed away. But the moral seems to be the same—that the more trouble she takes over making the requisite change in her economic organisation the better.

This argument for increased national self-sufficiency bears a superficial resemblance to the arguments for Protection; but it will be found, I think, that the resemblance is more apparent than real. It is one thing to diagnose that natural forces are at work to extrude productive resources from the export trades, and to prepare suitable asylums for their reception. It is quite another to aggravate the problem of transfer unnecessarily by measures which, by cutting into well-established channels of reciprocal trade, by provoking retaliatory increases of tariffs, and by enhancing the cost of instruments and

semi-manufactured materials, ^swould accentuate the pressure on the export trades.

(3) The ^{familiar} validity of the foregoing argument depends partly on the ^{assumption} that we are satisfied with the volume of our net new annual foreign investment. At their increased buying-power, our present volume of exports would purchase a volume of imports smaller by 3 per cent. than we took in 1913. In actual fact our volume of imports is 21 per cent. greater than in 1913. This is only possible because we have been content to buy fewer foreign securities. How far has this reduction in our net foreign lending come about spontaneously, and how far has it been the result of continuous pressure by our monetary authorities? I do not find it easy to determine.

The theory that our investors are inclined to make such large permanent investments abroad that our account can only be balanced through the attraction of short-term balances seems to me to find some confirmation for the troubled years 1925-7 in the available figures. Those for 1928-9 tell no such tale, but it is, of course, common knowledge that in the latter year at least the volume of long-period foreign investment was itself drastically repressed by high bank-rates and unofficial embargoes. At the same time I am tentatively inclined to ascribe our exchange troubles in 1929 far more to the vagaries of Continental Central Banks, indirectly enforcing the withdrawal of short-term balances, than to an abiding pressure on the part of British investors to transfer their fortunes abroad. The figures of the American balance of payments for the year ending June 1929 suggest that even the power of high call-rates in New York to attract foreign money may be exaggerated. On the other hand, if Sir Robert Kindersley's estimates proved correct, the situation in 1929 was relieved to an altogether exceptional degree by the operation of sinking-funds and the repayment of maturities of foreign loans, which together amounted to no less than £50 million.

On the whole, in this connection as in connection with the general level of money incomes, I am inclined to

attach rather less weight than some authorities to international disequilibrium as a cause of our troubles, as compared with factors which might operate even within a closed system. But I feel sufficiently aware of the *possibility* of disequilibrium, sufficiently uncertain of the future course of events, and sufficiently sceptical about the advantages of vast new foreign investments to a country in our position, to wish to see the present unofficial powers of control by our monetary authorities over the volume of foreign investment strengthened and regularised in any way that may be practicable. I do not feel that I have sufficient technical knowledge to make useful suggestions; but I am attracted by the idea of differential taxation.

III

THE MONETARY DOCTRINES OF MESSRS. FOSTER AND CATCHINGS¹

I

THE purpose of this article is to offer some comments on the monetary doctrines expounded by Messrs. Foster and Catchings in Part V of their book *Profits* and elsewhere, as well as on some of the criticisms of these doctrines made by the four writers whose essays were adjudged the most successful in a competition held for a prize for the best adverse criticism of Messrs. Foster and Catchings' book. No comments will be offered on Parts I to IV of *Profits*, which consist in the main of an exposition and defence, on well-established lines, of the general working of the institutions of economic freedom, competition and private property. Nor will any attempt be made to treat in detail of those portions of the Pollak Prize Essays, interesting though they are, which are devoted rather to elaborating the authors' own theories than to refuting the theories here under review.

I hope that Messrs. Foster and Catchings would agree that their general standpoint can be fairly summarised in the three following propositions. (1) The phenomena associated with what is called "trade depression"—accumulating stocks of unsold goods, unemployment, restriction of output below capacity—are the only important obstacles in the way of the abolition of poverty and a rapid raising of the standard of life for the whole population. (2) These phenomena are purely monetary in origin, in the sense at least that they could not arise in the absence of a monetary economy. But (3) they are due, not to any purely technical features of the

¹ *Quarterly Journal of Economics*, 1929. In the light of further reflection and of Dr. Hayek's interesting article "The 'Paradox' of Saving" (*Economica*, May 1931), I have re-written the paragraph on p. 149, dealing with the authors' Case IX.

monetary machine (for instance, the gold standard, note-issue regulations, or central bank policy), but to something inherent in the very nature of an economy characterised by the search for *profits* and by the making of individual and corporate *savings*. Before attempting to phrase more precisely, and to discuss more minutely; this last proposition, it seems advisable to comment briefly on its two predecessors.

(1) *Trade depressions are the only important cause of poverty.* I suspect that this proposition may be much more nearly true for the United States than for Great Britain. In Great Britain, in spite of our preoccupation with the problem of unemployment, we have to remember the authoritative pronouncement of Messrs. Bowley and Hirst in 1915: "It can hardly be too emphatically stated that of all the causes of primary poverty which have been brought to our notice, low wages are by far the most important." As the same investigators have shown, the position of most low-paid regular workers has improved perceptibly since that date; but he would be a bold man who would prophesy that poverty and the trade cycle could be buried in the same grave. Even for America, I cannot help feeling that our authors' confidence in the truth of their own discovery is apt to generate in them an exaggerated optimism, which is most marked in their latest and most popular work, *The Road to Plenty*. I gravely fear that "The Little Grey Man," the hero of that emotional romance, may, even if he gets his Plan to work, find a certain measure of disillusionment in store for him. But this, after all, is a matter of judgment and emphasis, on which further argument here would be barren and out of place; and we can all cordially agree that the causes of trade depression are well worth all the careful and elaborate study which they are now receiving.

(2) "*The trade cycle is a purely monetary phenomenon.*" I here cast this proposition in the form of a quotation from Mr. Hawtrey, as a reminder that it will be endorsed by many who will dissent from the more particular diagnosis shortly to be discussed. It would not be

sensible to attempt to set out fully here the strong objections which exist, in my view, to accepting it, or to elaborate the share in the causation of the trade cycle which may be attributed to variations in harvests, to inventions, to the inevitable discontinuity in the process of investment in the instruments of production and transport employed by a highly industrialised and rapidly progressive society. But it is relevant to my purpose to notice the argument (*Profits*, pp. 4-5, 224, 421) by which Messrs. Foster and Catchings seek to win assent to the proposition. Under a barter system, it is urged, a general over-production of goods could not occur, since the goods would provide a market for one another: "general over-production" means simply over-production *relatively to available money*. I see no reason to suppose that this is true. Even Robinson Crusoe, fishing eighteen hours a day in his new boat, could find that he was over-producing goods *relatively to his past and present efforts and sacrifices*—that is, getting less utility per unit of labour and waiting incurred than he expected. And in a slightly more complex society, as Professor Pigou has shown, it is quite possible for A to double his output in the expectation that each of his goods will exchange for twice as many of B's goods as before, and for B to double his output in a similar expectation; so that both, finding the terms of trade unchanged, have cause to regret their action, and each, if he tries to stick out for the *expected* terms, will find goods accumulating on his hands. Mr. Souter's ingenious demonstration on similar but more elaborate lines (*Pollak Essays*, pp. 25-33), while I do not pretend to have entirely mastered its later phases, seems to me to be conceived aright. So does his stricture (p. 45, note) on the "naïve belief that a curtailment of expenditure of money in one direction is immediately and proportionately 'compensated' by increased expenditure in another." The "monetary" school of trade-cycle theorists seem to me to overlook the significance of the *inelasticity*, in time of slump, of the demand for certain important things which are being relatively over-produced—particularly transport

facilities and constructional goods; whence it follows that any attempt to expand output on the part of these trades would, even under barter, furnish an inducement to other trades to *restrict* output. The diminished flow of money spent in such times on the products of the first group of trades is not a cause but a symptom of profound industrial maladjustment.

This is not, of course, to deny that the variability of industry is acutely aggravated by monetary causes. One such aggravation, which our authors note but, I think, wrongly interpret, will be discussed below. Moreover, when they come to the discussion of practical remedies, they are happily led to advocate one which can be, and has been, approved by many who would endorse neither their nor any other purely monetary theory of the trade cycle. Their prescription, long held up a tantalising sleeve, and at length triumphantly announced in chapter 15 of *The Road to Plenty*, turns out to be none other than our old friend,¹ the planning of long-range programmes of construction by central and local governments and big corporations, with a view to putting them into operation in such a way as to counteract the variations of private demand. On the quantitative and practical aspects of this suggestion some wise and cautious words of Dr. Bowley (*Is Unemployment Inevitable?* pp. 367-68) deserve attention; on the question of principle the present writer, at all events, is in entire accord, and would like to put into the hands of every member of the British Cabinet a copy of this sentence from *The Road to Plenty* (p. 201): "When production is far below capacity, and many workers are unemployed because demand for their products is insufficient, it is far better for the Government to spend money on public works than to use the money to pay debts."

II

We come at last to the third and most distinctive

¹ Whom we owe, I believe, originally to Mr. and Mrs. Webb (Minority Report of Poor Law Commission, 1909).

proposition: *The monetary cause of trade depression is bound up with the phenomena of profit and saving.* The experience of the critics (*Pollak Essays, Comments*, pp. 6 ff.) seems to show that in attempting to phrase this proposition more precisely, we must exercise great care if we are to avoid being accused by our authors of misstating their position. I will therefore confine myself for the moment to verbatim quotations. "First, there is no possibility of attaining the economic aim upon which all are agreed unless consumers somehow obtain enough money, year in and year out, to buy the goods about as rapidly as they are produced; second, the present money and profit economy does not enable consumers long to obtain the required money; third, there is consequently no possibility of sustained economic progress" (*Profits*, p. 231). "The system itself . . . normally and persistently, decade after decade, fails to provide consumers with enough money to acquire the goods which they are perfectly able and willing to produce" (*Profits*, p. 233; my italics). "As industry is now financed and corporate savings are now effected, the flow of money to consumers does not long keep pace with the flow of goods" (*Profits*, p. 399).

Now, it is perfectly true that Messrs. Foster and Catchings apparently do not regard the defect thus asserted as incurable—indeed, they believe they know how to cure it. But it is equally evident that they mean something much more than that, in a world where human foresight and organisation are imperfect, prices will sometimes have to be lowered if goods are not to remain unsold. Mr. Olmsted is, in my judgment, quite justified in saying that they try "to invest the mechanism of this defect with a mysterious atmosphere of mathematical certainty" (*Essays*, p. 69); and Mr. Bickerdike, in saying that "the authors suggest everywhere some inherent arithmetical difficulty in reconciling saving with the maintenance of a sufficiency of consumers' purchasing power" (*Essays*, p. 76). If there turns out to be no such inherent trick, so to speak, in the nature of things, nine-tenths of our authors' supposed contribu-

tion to the theory of the trade cycle must be rejected as based on an illusion. That their practical good sense enables them to reach several correct conclusions and to advocate a number of sensible courses, I have already admitted, and could, if space permitted, more abundantly illustrate. But it is quite clear that they started out to demonstrate the existence of a certain definite and persistent kink in the economic scheme; it is by no means clear from their comments on the *Pollak Essays* that their critics have convinced them that their analysis was erroneous; and it is on their exposition of the nature of this supposed kink, which is, after all, the only really distinctive feature of their work, that they must expect an academic critic still to concentrate attention.

They develop their argument partly by means of a series of hypothetical "Cases," partly with the aid of more general reasoning and an appeal to statistics. They attach so much importance to the Cases that it seems desirable to examine at any rate the leading members of the series in some detail. We are to suppose a single integrated corporation in control of the whole production and trade of the country, pocketing the whole receipts from the sale of goods to consumers and disbursing the whole wages bill and dividend bill. We are to suppose further (1) that the goods produced in any "year" or accounting period I are sold in the following "year" II; (2) that the wages relevant to the goods produced in year I and sold in year II are paid in year I; (3) that the dividends relevant to the goods produced in year I and sold in year II are paid in year II; (4) that the wages paid in year I are spent in year I; (5) that the dividends paid in year II are spent in year II. Thus we might get equilibrium year after year with the following position (Case II, *Profits*, p. 273):

Output	1,000,000 goods
Sales	1,000,000 goods
Receipts	1,000,000 dollars
Wages paid	900,000 dollars
Dividends paid	100,000 dollars
Price-level	100

There are certain difficulties about this construction. First, what exactly is meant by the "production" of goods? If we try to reckon as "produced" on any day those goods that receive their final touches on that day but were begun some time—say, for the sake of illustration, six months—earlier, then the goods produced in the first half of year I will be partially due to labour which was paid in year 0, and the wages paid in the second half of year I will be partially paid on behalf of goods which will not be produced till year II; and this is ruled out by assumption (2). It seems that we must conceive of production as an *instantaneous* act, to be followed a year later by sale. On this hypothesis our corporation will at any moment have to have twice as much working capital embodied in goods as it would if we adopted the more natural hypothesis that value is being steadily added to goods at an even rate between the date of commencement and the date of sale. This hypothesis of instantaneous production seems to me inconvenient, but I do not suggest that it is impossible to work with.

More serious is the question of the point of time at which dividends are supposed to be paid. It is one of our authors' cardinal doctrines (*Profits*, p. 31) that dividends cannot be paid until the receipts out of which they are paid have been harvested; yet in Case II we find that the dividends paid in year II are partly derived from the sale of goods on which they themselves have already been spent. It is no wonder that Mr. Novogilov tries to rescue the authors from this self-contradiction by representing them as having laid down that dividends are paid in the year following that in which they are earned by the sale of goods (*Essays*, p. 97); but there seems no doubt that in this Mr. Novogilov has committed a generous error, and allowed the terms of assumption (3) to escape his memory.

We are driven, I think, to suppose that Messrs. Foster and Catchings are picturing some such process as the following. The "year" must be conceived of as divided

into x "periods"; toward the end of each "period" the corporation, having during the "period" paid out $\frac{900,000}{x}$ dollars in wages and received them back in pay-

ment for goods, feels justified in distributing $\frac{100,000}{x}$

dollars in dividends, which it counts on receiving back, also in payment for goods, before the end of the "period." I suspect that they picture x as "1," so that the "year" and the "period" are identical; but I do not feel quite sure of this, and so far as Case II goes it is not necessary either to their conclusions or to ours that it should be so. Armed with this notion of the "period," we can inquire into the community's monetary arrangements. How much money will the corporation need to have on hand at the beginning of the "period"? If all its payments were wage payments (as in Case I), it would need $\frac{1,000,000}{x}$ dollars; the velocity of circulation of money

(that is, the number of times each unit of money changes hands per year in transactions of every kind) would be $2x$; the "circuit velocity" of money (our authors' name for the number of times each unit of money changes hands per year in purchase of goods for final consumption) would be x .

Now, does the fact that one-tenth of the corporation's payments are dividend payments make any difference to this result? It seems that we are free to make either of two suppositions. Either (a) the corporation pays the dividends with money already received during the "period" from the wage-earners, thus sending one-ninth of the money already used for wage-payments during the "period" on a second circular journey (in this case the total stock of money will be $\frac{900,000}{x}$ dollars,

and its average circuit velocity $\frac{10x}{9}$); or (b) the corporation pays the dividends with a stock of money

specially hoarded for that purpose since the beginning of the "period." In this case the total stock of money will be $\frac{1,000,000}{x}$, and its average circuit velocity x , just

as if all the corporation's payments were wage-payments.

If we are to stick as closely as Messrs. Foster and Catchings will allow us to their principle that dividends must be earned before they are paid, the former hypothesis, (a), seems to me far the more natural. But if we choose the latter, (b), we must note carefully that while the corporation does not actually advance money to the recipients of dividends except to a small extent, it is conceived of as holding idle, during nearly the whole of each "period," the whole of the money which will be required to satisfy their claims.

The importance of these conclusions will become plain when we come presently to consider our authors' theory of bank loans (Cases X and XI); meanwhile, there is a little to be said about some of the intervening cases. Up to and including Case IX we are to suppose the volume of money and its circuit velocity to be constant (the latter condition is, in fact, though they do not notice it, infringed in Case VII); up to and including Case VII we are also to suppose the price-level to be incapable of alteration. The most important of these cases is No. VI, in which, instead of paying dividends, the corporation spends its profits in hiring additional labour in order to increase its capital facilities and its output. Thus, starting from Case II, we get in successive years the following situations :

	Year I.	Year II.	Years III, IV, etc.
Output	1,000,000	1,100,000	1,100,000 goods
Sales	1,000,000	1,000,000	1,000,000 goods
Receipts	1,000,000	1,000,000	1,000,000 dollars
Wages paid	900,000	1,000,000	1,000,000 dollars
Dividends paid	100,000	0	0 dollars
Addition to stock of un- saleable goods	0	0	100,000 goods
Price-level	100	100	100

Thus they have demonstrated, with fair lucidity,¹ that if production increases and money remains constant, then, if prices cannot be reduced, goods will remain unsold. This result, however, is so firmly in accord with established monetary theory that one cannot really suppose that they claim for it any novelty or interest. The novelty lies in the thesis, presently to be discussed, that there is some inherent difficulty about increasing the supply of money to match the increase in production. All that is novel about Case VI is the terms in which the authors explain what has happened.

Money [they write] that is once used to bring about the production of goods is again used to bring about the production of goods, before it is used to bring about the consumption of goods. In other words, it is used twice in succession to create supply; whereas if the \$100,000 in question, instead of being *invested* in the production of additional goods, had been paid out as dividends and spent by the recipients, the \$100,000 would have been used alternately to bring goods to the markets and to take them off the markets.

I quote this passage in full because its motive continually recurs in the remainder of the book; but after prolonged study I am still unable to attach any sense to it whatever. The money "invested in the production of additional goods" is, as the authors have themselves insisted, forthwith "spent by the recipients," that is, by the wage-earners who are engaged in the production of the additional goods. And how on earth can the corporation be using the same piece of money twice in succession to "create supply"—that is, presumably, to pay wages—without receiving it back in the interval from some

¹ There are some unexplained things about the actual figures. Since 300,000 units of labour used to produce 1,000,000 goods, while 100,000 units of *new* labour produce only an extra 100,000 goods, it must be assumed that 10,000 of these units of new labour in year II are devoted to increasing "capital facilities." It is not clear how these 10,000 units of labour are employed in year III, since it seems that they neither produce a further increase in the output of goods in that year nor (so far as we are told), by adding further to capital facilities, enable the output of goods to be still further increased in subsequent years.

wage-earner in payment for goods "taken off the market"?

In Case IX the authors argue that if the Corporation reinvests its profits in its own business in such wise as to increase its output, and sells the increased output at a lowered price, no profits can be made. The argument is muddled and muddling, because for no obvious reason it is developed out of Case I, in which all payments are wage-payments and there are no profits. Had it been developed (like Case VI above) out of Case II, in which profits are being made, it would have been evident at once that the authors' conclusion involves the assumption that while prices fall and output per head remains unchanged,¹ money wages cannot be reduced. It is no more novel, therefore, than the conclusion of Case VI.²

¹ It must, I think, be inferred from the authors' arithmetic that they conceive of the process of investment as leading, not to an increase of output per head, but to a mere extension of the scale of the corporation's operations, through the absorption into employment of the normal increment of the country's working population. I think this conception is quite legitimate in treating of a dynamic society, and that Dr. Hayek's line of attack (see note I, p. 139), which is based on the assumption of fixity of population, therefore misses its mark. I should however agree with Dr. Hayek that if investment increases out of proportion to population, so that production becomes "more capitalistic" and output per head is increased, prices ought to fall.

² The story may be set out as follows —

	Year I (Case II).	Year II.	Year III (authors' hypothesis)	Year III (alternative hypotheses).	
				(a)	(b)
Output (goods) .	1,000,000	1,111,000	1,111,000	1,111,000	12,346,000
Sales (goods) . .	1,000,000	1,000,000	1,111,000	1,111,000	11,111,000
No. of Workers .	10,000	11,111	11,111	11,111	12,346
Wages paid (\$) .	900,000	1,000,000	1,000,000	900,000	1,000,000
Dividends paid (\$)	100,000	0		100,000	0
Total receipts (\$) .	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Price-level . . .	100	100	90	90	90
Money Wages (\$) .	90	90	90	81	81
Real Wages (goods)	90	90	100	90	90

Under both alternative hypotheses, money wages are reduced and profits emerge. Under hypothesis (a) these profits are distributed as dividends, under (b) they are invested in employing more labour. •

III

We reach at length the central stronghold (*Profits*, chapter 27) in which the authors, removing the condition that the supply of money remains unaltered, expound the nature of the kink in the scheme of things which tends to prevent the flow of money incomes from increasing as rapidly as the flow of saleable goods. Once more we must beware of their caution against falling into an *ignoratio elenchi* (*Comments on Pollak Essays*, pp. 6 and 12); we must not accuse them of saying that it is *inevitable* that the flow of money incomes should fail to keep pace with the flow of goods—they even give instances of circumstances in which it has not done so (*Profits*, pp. 410–13). But if words mean anything, they do assert much more than that it *sometimes* does so, or even that it happens to do so *as often as not*; they imply that there is on the balance a persistent underlying tendency for it to do so—a tendency which it will need considerable organised effort and ingenuity on the part of society to overcome. In support of this version of what they assert, I must once more have recourse to quotation (the italics are mine): “In modern trade, on the contrary, *the ordinary course* of financing increased production through the expansion of bank credit, in accordance with the tenets of sound business, upsets the annual equation” (*Profits*, p. 320). “The processes whereby capital investments are made do not *normally* bring forth increased consumer demand in proportion to the increased production that results from the enlarged capital facilities” (*Profits*, p. 372). “*As industry is now financed* and corporate savings are now effected, the flow of money to consumers does not long keep pace with the flow of goods” (*Profits*, p. 399). They cannot run away from the words which I have italicised without abandoning all that is distinctive in their theory.

Mr. Souter, by constructing a case of his own (*Essays*, pp. 49–51), has no difficulty, in my judgment, in showing that this belief of Messrs. Foster and Catchings is an

illusion, and that not only is it possible (which they would apparently admit) for a banking system so to function as to increase money incomes in proportion to increases in output, but (which is the point in dispute) that there is no *a priori* reason connected with the phenomenon of profits for expecting it to function in any other way. Mr. Novogilov takes the more heroic course of dissecting and amending their own cases, which he does with great acumen, though not, in my judgment, with complete success. Our authors (*Comments on Pollak Essays*, p. 15) attempt to discredit Mr. Novogilov's essay on the alleged ground that he breaks the rules by treating the cases as growing out of one another instead of as independent and isolated hypotheses. But a reference to *Profits*, pp. 308-9, shows that they themselves intend the three crucial cases (II, X, and XI) to represent the position in successive years: their attempt to rule Mr. Novogilov out of court for doing the same is, therefore, in my opinion, quite unfair.

Undeterred by Mr. Novogilov's unmerited fate, I propose to make an attempt to grapple directly with Cases X and XI. Starting from the equilibrium position described in Case II, we are to suppose (*Profits*, p. 309) that in the following year the corporation borrows \$90,000 of new money from the bank and pays it out in wages. It thereby increases its output by 100,000 goods, which, however, in accordance with the original assumption (1), will not be ready for sale till a year later. The position is set out as follows.

	Year I (Case II).	Year II (Case X).
Output	1,000,000	1,000,000 goods
Sales	1,000,000	1,000,000 goods
Receipts	1,000,000	1,090,000 dollars
Wages paid	900,000	990,000 dollars
Dividends paid	100,000	100,000 dollars
Price-level	100	109

The first comment to be made is this. There are cer-

tain very real difficulties, which I have tried to face elsewhere,¹ about studying the behaviour of the price-level *during a process* of money-expansion. Without attempting to go deeply into them, let us recall the distinction drawn above between the "year" and the "period." To define those terms precisely, the "year" is (on the authors' assumption of instantaneous "production") the interval of time which elapses between the date at which an article is produced and the date at which it is offered for sale; the "period" is the interval of time during which a unit of money is used once for the purchase of goods by wage-earners. Now if, as is certainly the case in real life, the year is longer than the period, the new money which is paid out in wages and spent on goods in the first period of the year will be used again for the payment of wages and the purchase of goods in each later period of the same year; and we must allow for this in our account of the effect of the process of money-expansion on the price-level. I feel pretty sure, however, that this difficulty is not the source of the authors' troubles. It seems quite clear that in Case X they are assuming that the "year" and the "period" are identical and that none of the new money created by the bank in year II is spent more than once by a wage-earner in that year; and in this simplification I am glad to follow them.

But the main point to notice is that upon which Mr. Novogilov has rightly pounced (*Essays*, p. 97)—the figure of \$100,000 entered by the authors as the dividends paid in year II. No explanation is offered of this figure; yet it seems to require a good deal. Here is the corporation having sold to wage-earners for \$990,000, instead of the old \$900,000, goods which cost it some \$810,000² in the previous year to produce; yet it pays out to its shareholders only the same money sum that it

¹ See my *Banking Policy and the Price Level*, pp. 60 ff., and Pigou, *Industrial Fluctuations*, Part I, ch. xiv.

² About \$817,000, if we adopt the authors' supposition that in the second year $\frac{9}{10}$ of the total sales are made to wage-earners.

did in the previous year, and that money sum represents a smaller command over goods. It seems unlikely that we shall derive much illumination from an assumption so little in accord with what we know to happen, in periods of rising prices, in real life. From what our authors have told us of the corporation's previous habits (*Profits*, p. 308), we might even expect it to pay out the whole of its realised profits in dividends; it is surely at least reasonable to suppose that in year II it will be willing, as it was in year I, to pay out one dollar of dividends for every nine dollars received from the sale of goods to workpeople. In that event the dividends paid will be \$110,000; the total receipts, \$1,110,000; and the price-level, not 109, but 110.

We are left, as I have said, to guess at the reasons for which the authors make their corporation behave in so improbable a manner; but it is impossible to resist the suspicion that they do so because they believe that, however much it may want to raise its dividends, *it will not be able to find the money to do so*. In order to see whether there are any grounds for such a belief, we must revert to the two alternative hypotheses about the community's monetary arrangements set out in connection with our discussion of Case II. I propose to work first on what I consider far the more reasonable hypothesis, because it springs naturally out of the attempt to conform as closely as possible to the authors' principle that dividends must not be paid until they are earned. That hypothesis (*a*) is that the community possesses, to start with, 900,000 pieces of money, the whole of which (in accordance with our original assumptions (4) and (5)) is at the beginning of each year in the hands of the corporation; and that out of every nine pieces of money paid to and received from wage-earners in any "period" (which, we have agreed, now also means in any year), one piece is sent on a second circular journey, this time to and from the recipients of dividends. On this hypothesis, there is no difficulty about what happens in year II: 10,000 of the new pieces of money, as well as

100,000 of the old pieces of money, are used a second time, namely, for the payment of extra dividends. Thus the average circuit velocity of money is kept unchanged; and we note also that by the end of the year the stock of money has been increased by 10 per cent.—that is, in the same proportion as the output, the wages-bill, the dividend-bill, and the price-level.

Let us now, using the same monetary hypothesis (*a*), push on into Case XI, representing the events of year III, during which the additional output of year II comes on to the market, while output is still further increased with the aid of still further loans from the bank. Messrs. Foster and Catchings contend that in that year the price-level must fall below the level reached in year II, unless the supply of money is increased at an accelerating rate. It is not, I think, worth while to transcribe their actual figures, since, as Mr. Novogilov points out, they are clearly vitiated by the supposition that bank-money and output increase, not in geometrical but in arithmetical progression—that is, that in spite of the big profits realised in year II the *rate of increase of production*¹ declines in year III. But their main defect is (as Mr. Novogilov also sees) the same as that of Case X—that they assume that the dividend-bill remains absolutely fixed (apparently to all eternity), while the money-supply and the wages-bill continue to rise. On hypothesis (*a*) there is, as we have seen, no earthly reason why this should happen: the annual increase in the receipts from wage-earners not only justifies a corresponding increase in the dividend-bill, but provides the money instruments with which it can be made. The complete story of the three years is told in the following table (see top of next page):

Thus we get a uniform rate of increase of money and output with (after the first inevitable kink) an unchanged level of prices. The authors' conclusion (*Profits*, p. 310) that "the higher price-level which results from an

¹ On pp. 99-100 of the *Essays*, Mr. Novogilov several times inadvertently writes "rate of production" for "rate of increase of production."

	Year I (Case II).	Year II (Case X, amended).	Year III (Case XI, amended).
Output	1,000,000	1,100,000	1,210,000 goods
Sales	1,000,000	1,000,000	1,100,000 goods
Receipts	1,000,000	1,100,000	1,210,000 dollars
Wages paid	900,000	990,000	1,089,000 dollars
Dividends paid	100,000	110,000	121,000 dollars
Money-stock at end of year	900,000	990,000	1,089,000 dollars
Price-level	100	110	110

increase in the volume of money as production expands cannot be sustained unless the volume of money is increased at an accelerating rate" turns out to be without foundation.¹

¹ In view of a later argument of the authors (see below, p. 161), it is of interest to set out the balance-sheet of the corporation (omitting fixed capital, about which we know nothing) at the end of each year.

Year I.

Capital	\$1,800,000	Goods "produced," but not ready for sale, at cost	\$900,000
		Cash in hand	900,000
			<hr/>
			\$1,800,000

Year II.

Capital	\$1,800,000	Goods	\$990,000
Surplus	90,000	Cash	990,000
Debt to bank	90,000		<hr/>
	<hr/>		\$1,980,000
	\$1,980,000		

Year III.

Capital	\$1,800,000	Goods	\$1,089,000
Surplus	189,000	Cash	1,089,000
Debt to bank	189,000		<hr/>
	<hr/>		\$2,178,000
	\$2,178,000		

Thus a growth of surplus, or undivided profit, is seen to be quite compatible with stability of the price-level.

The only loophole that I can see for Messrs. Foster and Catchings is that they should take refuge in our alternative hypothesis (*b*) about the community's monetary arrangements: and this loophole is not difficult to block. That hypothesis is that, while dividends are not paid till the receipts from wage-earners have been harvested, it is for some reason impossible to use for the payment of dividends the pieces of money which have been received from the wage-earners. In this case the corporation must start year I and year II, not with 900,000 but with 1,000,000 units of money. And if it can borrow only for the payment of wages, it does follow that in year II, although it is making a profit of some \$180,000 on the goods sold to wage-earners, it will be unable to pay more than \$100,000 to its shareholders; and that, though it starts year III with a stock of 1,090,000 units of money, yet since it will require all these for the payment of wages it will still be unable to increase its dividends beyond \$100,000. It is difficult to think of any reason for this curious taboo. Presumably, just as in Rossel Island there are certain kinds of money so sacred that they are used only for the purchase of wives and pigs, so in our hypothetical community the dividend-money is so sacred that it must not be soiled by the hands of wage-earners.¹ But if this state of affairs really prevails, then it surely follows that the hoarding of this special money through the greater part of the year is a business expense to the corporation, for meeting an addition to which it will not hesitate to borrow, any more than it will hesitate to borrow to meet an increase in the wages-bill. If the authors reply that in real life corporations do not borrow in order to accumulate funds for the eventual payment of dividends, I will resist the temptation to reply, in their own words when commenting on Mr. Novogilov (*Pollak Essays*, p. 15), that "it is beside the point to show that any of the Cases . . . does not conform . . . to the actual business world.

¹ W. E. Armstrong, "Rossel Island Money," *Economic Journal*, Sept. 1924.

It is not intended to conform." For unless these cases are intended to illuminate what happens in real life, they are a great waste of all our time. I will reply rather that in real life, as Mr. Souter has shown, business firms *do* borrow in order to pay profits—if not their own profits, then other people's. The miller borrows to pay for wheat which is already loaded with the profits of the farmer, the baker to pay for flour which is already loaded with the profits of the farmer and the miller; and the money thus created serves perfectly to provide profits for the baker as well. Mr. Souter is quite justified in pointing out (*Essays*, p. 52) that Messrs. Foster and Catchings, having shown that the assumption of complete vertical and lateral integration does not impair the general validity of Case II, tacitly and illicitly assume that it cannot impair the general validity of Cases X and XI. If we are compelled to assume integration and monetary hypothesis (*b*), we must be allowed also, if our results are to have any relevance to real life, to assume that the corporation is able and willing to borrow for such a legitimate business expense as the storage of sacred money. Thus, as under hypothesis (*a*), the stock of money will increase annually by 10 per cent., and the price-level will rise in year II to 110 and thereafter remain unchanged.¹

We need not delay long over Case XII, in which it is correctly demonstrated that the repayment of a bank loan by the corporation will contract money and depress prices, and incorrectly stated (my italics) that "this is, in fact, precisely what happens *in the ordinary course* of financing increased production by means of expansion of the volume of bank credit." It may be true that in real life some individual producers (especially those

¹ Mr. Novogilov's criticism of Cases X and XI starts, as I have said, excellently, seizing the essential points, and reaches (*Essays*, p. 106) the right general conclusion. But, perhaps owing to the slip (already noted) about the year in which dividends are paid, he does not, I think, quite successfully expose what I take to be the heart of the authors' error; namely, the assumption that there is no way in which additional money can ever be used for the payment of dividends.

whose operations are seasonal) periodically free themselves altogether from indebtedness to the banks; but Messrs. Foster and Catchings adduce no arguments for supposing that "in the ordinary course" of real life industry as a whole is progressively reducing its net indebtedness to the banks, or therefore that in their hypothetical world they have any grounds for representing their integrated corporation as doing so *in the ordinary course*.

IV

I pass on therefore to the chapter (30) in which statistical evidence is adduced in support of the contentions that the chief cause of the failure to make "much progress . . . during the last generation toward higher standards of living for the people generally" lies in "the failure of consumer demand to keep pace with output" (*Profits*, p. 377), and, more precisely, that "every marked recession in business follows a period during which goods are piled up beyond the capacity of willing buyers to take them off the markets" (*Profits*, p. 379; my italics). The figures and charts presented seem to fall into four groups. In the first group (*Profits*, pp. 379 and 393) it is shown without difficulty that the money incomes both of income-tax payers and of wage-earners rise during trade boom and fall during trade depression. Our authors admit that no certain conclusion as to causal relations can be drawn from this; but they do not seem to notice that, even if it could, the conclusion would not be that which they are seeking to establish. For it is necessary to their thesis that consumers' incomes should be in defect not merely during the depression but during, at any rate, all but the earliest phases of the preceding boom. The second group (*Profits*, pp. 383-90) consists of Mr. Snyder's important demonstration that the variability of *trade* is less than that of *production*, and the variability of *retail* trade less than that of *wholesale* trade. That is to say, stocks of goods increase during the trade boom; and Messrs. Foster and Catchings infer

that they do so because consumers cannot buy them. But it surely fits in better with what we know of such periods to suppose that they do so partly because of the various congestions which occur when the economic machine is working at full pressure, and partly because traders withhold them from sale in the expectation of still higher prices. Our authors fail to draw any distinction¹ between the *designed* accumulation of goods by *merchants* in time of boom, and the *involuntary* accumulation of goods by *manufacturers* in time of slump.

The third piece of evidence (*Profits*, p. 391) is to the familiar effect that wholesale prices rise faster than retail. Now, it does not follow from the mere existence of this lag that producers and traders will be unable during the boom to sell their products at a profit: for instance, if the lapse of time between the purchase of goods and their re-sale is six months, all will be well for the trader if the retail price-level in December touches the level reached by the wholesale price-level in the preceding June. But it does follow that those who are caught as holders of goods by the turn of the tide will incur loss; and it is, at least, probable that many intermediate transactions—whether in wholesale consumable goods, production goods, securities or real estate—entered into long before that date will in the end prove to be unprofitable. This is indeed one of the most obvious of those monetary aggravations of the trade-cycle whose existence I have earlier admitted. The present laxity of the banks in expanding the money incomes of consumers leads the business world to expect that this laxity will continue, and to enter into intermediate transactions at a price-level which will be justified only if that expectation is fulfilled. Our authors (at any rate in *Profits*—for by *The Road to Plenty* they seem to have somewhat altered their tune) lead us to suppose that they think that the remedy is for the banks to continue indefinitely to expand the money incomes of consumers, in such wise that the intermediate dealers

¹ Well drawn by Bellerby, *The Control of Credit*, p. 75.

are never disappointed in the prices which they receive. The objection to this course of action is that the more compliant the banks show themselves, the more confident the intermediate dealers will become, and the more inflated the prices at which they will deal; and so the vicious spiral will continue. The commoner and wiser view is that in such circumstances the duty of the banks is not to encourage the intermediate dealers by laxity, but to discourage them by niggardliness, in the creation of money.

The final piece of evidence is an analysis, on lines laid down by Mr. Hastings,¹ of the balance-sheet of a number of corporations, designed to show that over a span of years their financial dispositions were such as to cause a considerable "net deficit in consumer purchasing power." Now, it seems to me true and important that in a country which is rapidly growing in wealth the financial policy of corporations may change in such a manner as to exercise a depressing effect on prices. If corporations take to *hoarding* a large part of their profits in the form of bank balances, they will decrease the velocity of circulation of money (Case VII, *Profits*, p. 281); similarly if, having previously relied on the banks for their extensions of working capital, they take to providing the latter out of their own profits, they may put the banks to some difficulty in finding such outlets for their funds as will both bring money into touch with commodities and be consistent with the principles of sound banking (an indefinite expansion of call loans, for instance, would satisfy neither criterion). In either case they will be exercising an influence on the side of a fall in the price-level. I have suggested elsewhere² that something of the kind may have been happening in the United States in quite recent years, and may have combined with other causes to make it difficult for the Federal Reserve System to prevent a sagging price-level. But I can find no trace of this process at work in Mr. Hastings' computations for 1920 (*Costs and Profits*, pp. 108-

¹ In his *Costs and Profits*.

² *Money* (1928), p. 175.

14), which are used as the model for computations for the period 1919-22. It may be that, through lack of familiarity with the technique of accountancy, I have misunderstood Mr. Hastings' method; but so far as I can see, the main burden of his complaint is that corporations did not in 1920 distribute as cash dividends an increase in the book value of their assets resulting from an increase in the volume and a writing-up of the values of inventories and from an increase in the debts owing to them. It is hard to see how they could, or why they should, have done so; or how their failure to do so led to a "deficit of purchasing-power" (cf. my note on p. 155). It seems clear that the phenomenon here studied by Mr. Hastings has nothing to do with that increased desire to use resources in substitution for bank loans or in accumulation of bank balances whose existence in later years there is some reason for suspecting, and which alone among the possible changes in the financial policy of corporations seems calculated to promote a fall in the price-level.

To sum up. In focusing attention on the subtle interrelations between the supply of money and the phenomena of *saving*, Messrs. Foster and Catchings have hit upon a fruitful theme, and one to which many monetary writers have given inadequate attention. Their failure to achieve convincing results is due, perhaps, to two main causes. In the first place, I can feel little doubt that they were born with a double dose of the inflation-bacillus in their composition; and though they have done their best to exorcise it with prayer and fasting, so that they are able (*Profits*, p. 364) to look down with a detached pity on such more gravely afflicted sufferers as Major Douglas, yet at critical moments the bacillus is always apt to take charge of the argument. Secondly, the tools with which they work are not sharp enough. In particular, while they see clearly, and deserve much credit for, the distinction between the *general* velocity of circulation of money and the velocity of its circulation in exchange for the goods which enter into final con-

sumption, yet the true nature of prices which they have hidden from them. In an extraordinarily muddled passage (*Profits*, p. 330) they announce that "if money moves faster in the same channels, the result is a corresponding acceleration of the flow of finished goods to markets; and consumers' income is, therefore, as far short as ever. Other things being equal, doubling either the velocity of money in general or the circuit velocity doubles the deficiency." That passage could not have been written by anyone who had at his command the powerful weapon, forged originally by Petty and sharpened by Marshall and Pigou—the conception of the *proportion of resources over which people wish to keep command in the form of money* as the ultimate determinant of the velocity of circulation. Lacking this weapon, our authors have had to create their own inadequate equipment—producer's side and consumer's side, alternate use of money in production and consumption, and all the rest of it. In spite of their over-complacent attitude towards the very pertinent thrusts of their critics, they seem to be anxious to be open-minded, and all their work is infected with a very evident and disinterested desire for the public good. Is it too much to hope that in the interests of truth they will throw over the whole of their pseudo-scientific apparatus, while continuing, in the interests of humanity, to use their considerable gifts of exposition on the side of wise and practicable policies of reform?

IV

NOTES ON INTERNATIONAL TRADE

I. THE TERMS OF TRADE [1924]¹

IN the *Economic Journal* for December, Mr. Keynes restates his reasons for supposing that in the decade before the war the real ratio of international interchange was turning in favour of agricultural and against manufacturing countries, in such wise as to yield year by year a decreasing quantity of the products of the former to a given expenditure of effort in the latter. In *Economica* for February Sir William Beveridge gives his reasons for rejecting this view. In this controversy I do not intervene. My concern is with the second section of Mr. Keynes's article, in which, having admitted that after the war the ratio of interchange swung violently in England's favour, he proceeds—a raven not thus easily to be baulked of his croak—to draw disquieting inferences from this apparently encouraging fact. In brief, he suggests that “we are asking too much for our exports, and will have to ask less if we are to sell enough to pay for our necessary imports”: in other words, that stable equilibrium in our trade can only be secured at the cost of a further reduction in real wages. I think this suggestion may correctly indicate the best policy which, in the circumstances, it is open to us to pursue; but I think also that it is somewhat misleadingly phrased, and

¹ *Economic Journal*, 1924. I have thought it worth while to reprint this note as it stands, because, so far as I know, it was the first attempt in print to analyse what has since become a commonplace of economic discussion. The average value of our imports in terms of exports rose slightly between 1924 and 1929 till it reached about 85 per cent. of the 1913 level, and then fell violently during the slump of 1929-31, as it had done in 1920-21.

that its highly paradoxical nature deserves further comment.

The phrase "asking too much for our exports" seems to me to cloud the issue by suggesting that the price in question is an artificial one, out of accordance with the conditions of current demand and supply. It is by no means clear to me that this is the case. Let us take a simplified instance of the time-honoured kind. Anglia is exchanging cotton-goods for Transmarine wheat. As a result of good harvests Transmarina's demand schedule, in terms of wheat, for Anglian cotton-goods is raised throughout—the ratio of interchange alters in Anglia's favour. But Anglia's demand for wheat has, let us suppose, an elasticity less than one, with the result that Anglia, importing at least as much wheat as before, exports fewer cotton-goods. She is potentially richer than before, for she finds herself with a surplus of productive power, no longer required for obtaining imports but theoretically divertible into other uses. But in so far as that surplus is stereotyped in the form of cotton-stocks, cotton-mills and cotton operatives, those stocks will accumulate, those mills be idle, and those operatives unemployed: there will occur all the recognised symptoms of "trade depression." There are now two alternative policies for Anglia. She may attempt to convert her resources to other uses: or she may, in order to prevent distress among particular groups of capitalists and work-people, deliberately degrade her standard of life below that to which the conditions of reciprocal international demand entitle her. Which policy she will be wise to adopt depends (like the wisdom of accepting an indemnity¹) partly on the difficulty and expense of the process of conversion, and partly on how far the original alteration in the ratio of interchange may be expected to be permanent. But the second policy, if adopted, is at best a *pis aller*, and it is the new alteration thus effected in the ratio of interchange, not the original alteration, which is contrived and artificial.

¹ Cf. J. M. Keynes, *A Revision of the Treaty*, pp. 152 ff.

This instance seems to represent fairly the essential features of the post-war slump in British trade. Agricultural production had continued relatively undisturbed: industrial production had been gravely dislocated, and its fruits were in keen demand for reconstruction and restocking purposes. The defection of the German and Russian markets compelled overseas agriculturists to force their wares on the rest of the world. Whether or no normally inelastic, our demand for raw produce became so in face of the great reductions in real price flung at our heads. So the Argentine, Indian and other oversea exchanges crashed: the grower of raw produce found himself deprived of his power to purchase our goods, and "depression" overtook our export trades. The improvement in the ratio of interchange, which should have been for our wealth, became unto us an occasion of falling.¹ The process is seen at work in the quarterly figures (extracted and calculated from the *Board of Trade Journal*) exhibited in Table I. Perhaps in 1921 it really went too far, owing to the continued export of manufactured goods made out of materials bought at the higher price-level, and priced accordingly, and to the artificial paralysis of export by the coal dispute. But it looks as though in 1922-24 something like a true equilibrium has been attained: though, of course, it is still open to anyone to argue that this equilibrium is not likely to be permanent.

To this interpretation of recent history one obvious objection may be made. The argument of our simplified example requires that the volume of Anglia's *imports* shall not be diminished by the improvement in the ratio of interchange. Even if her demand for wheat is completely inelastic, she will not import *less* than she did

¹ Normally, as Mr. Keynes remarks, an improvement in the real ratio of interchange is associated with an industrial boom in this country (for further instances see my *Study of Industrial Fluctuation*, pp. 168-9). His inference that boom conditions are secured "at the expense of" agricultural countries is, I think, unfortunately phrased. If the lowered price of raw produce is due to the bounty of nature, *everybody* concerned may gain.

TABLE I
(Corresponding period of 1913 = 100.)

	Average Value of Imports.	Average Value of Exports.	Average Value of Imports in terms of Exports.	Volume of Imports.	Volume of Exports required to purchase actual Volume of Imports.	Actual Volume of Exports.
1919 . .	240	277	87	88·4	76·6	54·9
1920-1 . .	284	326	87	95·2	82·9	71·3
2 . .	285	358	80	96·6	76·9	73·5
3 . .	289	376	77	90·6	69·6	73·6
4 . .	283	373	76	73·1	55·5	65·4
1921-1 . .	220	334	66	71·3	47·0	53·5
2 . .	192	283	68	75·5	51·2	38·4
3 . .	182	241	76	78·6	59·4	46·4
4 . .	170	226	75	72·3	54·4	60·7
1922-1 . .	149	218	68	79·7	54·5	67·1
2 . .	152	196	78	91·5	71·0	65·0
3 . .	155	196	79	86·9	68·7	69·9
4 . .	153	189	81	85·5	69·2	73·3
1923-1 . .	146	196	74	95·3	71·0	74·4
2 ¹ . .	148	188	79	94·8	74·6	77·6
3 ¹ . .	151	192	79	88·8	69·8	68·7
4 ¹ . .	152	184	83	92·8	76·7	77·5
1924-1 ¹ . .	150	193	78	99·3	77·1	74·6

¹ Approximate correction made for exclusion of Irish Free State.

before. But the volume of British imports is seen to have been less by one-ninth in 1919 and 1920 than in 1913, and by one-quarter in 1921 than in 1919 and 1920. Here indeed is an odd result of cheapening—that we should actually buy less of the cheapened thing! Must we conclude then after all that the post-war ratio of interchange is not a genuine register of a change in the conditions of reciprocal demand, but is in some manner spurious and uneconomic? I think not, for a reason which can best be made plain by another example. Let Anglia now import from Transmarina not only wheat but the raw cotton which she transforms into cotton-goods for export: thus the wheat is in effect payment for

her manufacturing effort. Let there occur an alteration in her favour of the ratio of interchange. Her demand for wheat being inelastic, she will find it worth while to expend less cotton-manufacturing effort than before, and will therefore export fewer cotton-goods, and will therefore, in spite of its lowered real price, import less raw cotton. In the following numerical illustration, it is assumed that as a result of war the price of Anglia's imports, in terms of her own labour and of her own currency, is reduced by 20 per cent., and that her demand for wheat is completely inelastic. The item "wheat" may be taken to include cotton worked up by Anglia for her own use.

Imports (£ millions Anglian).

Exports (£ millions Anglian).

(1) *Pre-war Trade.*

Raw cotton	25	Cotton in goods	25
Wheat	20	Manufacturing effort	20
	<hr/>		<hr/>
	45		45

(2) *Post-war Trade.*

Raw cotton	16	Cotton in goods	16
Wheat	16	Manufacturing effort	16
	<hr/>		<hr/>
	32		32

(3) *Post-war Trade at Pre-war Values.*

Raw cotton	20	Cotton in goods	20
Wheat	20	Manufacturing effort	16
	<hr/>		<hr/>
	40		36

The post-war position is seen to be one of real equilibrium, and essentially more favourable to Anglia than the pre-war position, in spite of the diminished volume not only of exports but of imports.

This example suggests that our diagnosis of the essential nature of the post-war slump in British trade is not necessarily invalidated by the decline exhibited in Table I in the total volume of imports. It suggests too that we need not be unduly scared by Mr. Keynes's demonstra-

tion (*Economic Journal*, 1923, p. 482) that the aggregate of our manufactured exports would command (he says rather confusingly "are now buying") 12 per cent. less food-stuffs than the aggregate of our manufactured exports before the war. It would be alarming indeed if we were, in fact, buying less food; but we are actually buying more.¹ (In the above example, Anglia's post-war total of manufactured exports would only command $\frac{2}{3}$ as much wheat as her pre-war total of manufactured exports: yet she is buying just as much wheat as before—it is her raw material imports which she has found it advisable to restrict.) Table II exhibits in more detail,

TABLE II
(Corresponding period of 1913 = 100.)

	Retained Food Imports.		Retained Raw Material Imports.		Manufactured Exports.	
	Average Value.	Volume.	Average Value.	Volume.	Average Value.	Volume.
1920-1 . .	275	106	346	89	314	72
2 . .	288	90	329	111	350	80
3 . .	308	84	283	112	375	81
4 . .	336	69	247	78	375	72
1921-1 . .	246	92	181	62	344	55
2 . .	216	99	150	66	298	40
3 . .	183	88	186	64	251	46
4 . .	181	84	174	58	234	62

from this point of view, the course of events in the critical years 1920-21.

The general conclusion is that if a country's resources in capital and labour were completely mobile between different occupations, an improvement in the ratio of interchange would be an unmixed blessing, even though it led to a reduction in the volume both of exports and

¹ One per cent. more, if we take a similar average of triennial averages to that from which Mr. Keynes derives his 12 per cent. figure: 14 per cent. more, if we compare 1923 directly with 1913, itself a year of maximum.

imports. If we could costlessly erect a vast sausage-machine which would grind shipyards into cottages and cotton-spinners into plasters, we should be wise to do so. I am not sure that even as it is we ought not, so far as labour is concerned, to take a leaf out of Germany's book, and make a far more decisive move in that direction than we have yet done. But if the difficulties are too formidable, or if we take the view that the present situation is too transitory to make the attempt worth while, we may have in practice to fall back on the expedient advocated by Mr. Keynes—a contrived fall in the ratio of interchange, just as it may be right in certain circumstances to break windows in order to save glaziers from starvation. There is indeed a third alternative, to which we have already had some recourse—an artificial stimulation of the export of goods on credit, that is, of foreign investment. I do not gather that Mr. Keynes sets much store by this;¹ but it seems more sensible to get something for our goods, even if only bits of South American paper, than in effect to give some of them away, by selling them cheaper than we need.

To sum up, we are buying adequate food for our growing population, paying £30 million a year interest to the United States, and sending abroad £100 million worth a year of new savings sorely needed at home; and still we have a surplus of export-producing power. I do not know whether Mr. Baldwin had these considerations in mind when, to the bewilderment of friend and foe, he advocated a restriction of exports; but I think he might have had.

¹ See his exposure of the disadvantages of Protection from this point of view, *The Nation*, Nov. 24, 1923.

II. THE TRANSFER PROBLEM [1929]¹

§ I. THE reparation problem seems to be still unsolved in practice; nor (which is perhaps of less interest to the world at large) do economists yet appear to be agreed on its theoretical aspects. Does the need to make reparation payments impose on a country a "transfer-burden" or "transfer-difficulties," apart from the budgetary difficulty of raising the necessary sums by taxation? Or are those who suppose this neglecting the "increase of purchasing-power abroad" which comes about as a result of the payments? And, incidentally, how valid is the analogy often taken for granted between such payments and the export of capital?

Discussion of these matters² is apt to be carried on at cross purposes, for two reasons. First, it is not always clear whether the disputants are discussing the methods by which adjustment is brought about when reparations begin to be paid, or whether they are discussing the features of the new state of equilibrium which prevails while they are being continuously paid.³ It is perhaps to the former that the phrase "transfer-difficulties," to the latter that the phrase "transfer-burden," is appropriate; and it is with the latter that I propose to deal. Secondly, the champions of "transfer-burden" write with a vision firmly planted on their retina of the familiar

¹ Not previously printed.

² See Keynes, three articles in *Economic Journal*, 1929, and *A Treatise on Money*, vol. i. pp. 329-42; Ohlin, articles in *Index*, April 1928, *Economic Journal*, 1929, and *Zeitschrift für Nationalökonomie*, 1930; Haberler, two articles, and Machlup, one article, in the same *Zeitschrift*, 1930.

³ Cf. Keynes, *op. cit.*, i. 332.

Marshallian curves of real demand-and-supply, from which they usually deduce that the pressure to remit reparations from one country to another will turn the real ratio of interchange in the first country's disfavour, by an amount which may be great or small in accordance with the respective elasticities of real demand, but cannot be less than zero.¹ This result they usually regard as self-evident and inevitable, whatever the nature of the monetary happenings in which it is enshrined; but they have nowhere, so far as I know, explained clearly the reactions of a reparation payment on the shape and position of the Marshall curves.² Their opponents, on the other hand, think entirely in terms of monetary demand curves; and, on the ground that the position and perhaps the shape of these curves will change as a result of the reparation payment, are prone to deny the validity of appeals to "elasticity-analysis."³ And their modes of expression frequently leave one uncertain whether they are, or are not, making some statement which is incompatible with the fundamental proposition of the opposite party.

§ 2. The deniers of "transfer-burden" correctly point out that if, as it is natural to assume, the reparation-money is raised by taxation in the paying country (to be called Germany) and used for remission of taxation in the receiving country (to be called America), the net annual flow of money devoted to the purchase of goods is less in Germany, and greater in America, under the new conditions than under the old. But this statement by itself throws no light whatever on the question whether a "transfer-burden" has been imposed on Germany, *i.e.* whether the real ratio of interchange has moved against her. It is compatible both with the existence and with the non-existence of such a burden.

¹ Taussig, *International Trade*, pp. 109-15; Pigou, *Essays in Applied Economics*, p. 153.

² Except, apparently, for an unfortunate attempt by Marshall himself, in connection with an analogous problem: see below, § 7.

³ See especially Haberler, *Zeitschrift*, Aug. 1930, p. 101.

In order to illustrate this matter numerically, let us make certain assumptions. First, let us assume that a rigid gold standard technique is in force in both countries, *i.e.* that in each country the relation between the gold stock and the total quantity of money remains the same under the new conditions as under the old. Secondly, let us assume that the representative man in each country needs to hold the same money balance in connection with a given annual expenditure on goods as he does in connection with an equal annual expenditure in payment of taxes: so that in each country the number of times in a year that a representative unit of money becomes income is the same under the new conditions as under the old. From these two assumptions it follows that in each country the proportion of aggregate incomes to gold stock has remained unchanged. Call this proportion *V*. Thirdly, let us suppose for simplicity that all taxes are direct; that there were no taxes in America other than those which have been newly remitted; and that there are no taxes in Germany other than those which have been newly imposed. Fourthly, let us suppose, again for simplicity, that Germany's consumption of American goods is completely unchanged, *i.e.* that she makes the reparation transfer entirely by increasing her exports.

Then consider the following tables:—

Germany.

America.

I. *Original situation :*

Total income of £1,400 buys 1,300 <i>g</i> goods + 100 <i>a</i> goods.	Total income of £1,600 buys 900 <i>a</i> goods + 100 <i>g</i> goods and pays £600 taxes.
Gold stock £1,400. $V = 1$.	Gold stock £1,600. $V = 1$.
Price of <i>g</i> goods = £1.	Price of <i>a</i> goods = £1.

II. *New situation, on assumption of unchanged ratio of interchange :*

Total income of £1,400 buys 700 <i>g</i> goods + 100 <i>a</i> goods and pays £600 taxes.	Total income of £1,600 buys 900 <i>a</i> goods + 700 <i>g</i> goods.
Gold stock £1,400. $V = 1$.	Gold stock £1,600. $V = 1$.
Price of <i>g</i> goods = £1.	Price of <i>a</i> goods = £1.

New foregoing examples it is assured interchange is moved
 Germ. and are sufficient, to draw into
 come of pay a new increment of £ of £1,800 buys 900
 as + tax iately productive lead 840 g goods.
 taxes.
 stock £1,200 portrayed is that during £1,800. $V = 1$.
 of g goods. "moving equilibrium" — we goods = $\frac{1}{2}$.

ation payments, construct
 The char year after year. And it den " are, I think,
 sometimes his may not be the case, ough the fact that
 reparationly at the disposal oves that there *must* have
 been a g nchanged. many to America and an
 alteration, in the return to of gross money incomes in
 the two countries. Table II shows that this is not the
 case, and that, so far as monetary factors go, the relative
 flows of "net purchasing-power" *might* alter without the
 relative size of gross money incomes altering. On the
 other hand, Table III shows that an alteration in the
 relative flows of "net purchasing-power" is perfectly
 compatible with the existence of a severe "transfer-
 burden," so that to assert the existence of the former is
 by no means to disprove the existence of the latter.

§ 3. We may turn aside at this point to inquire how
 far, so far as the matters dealt with in § 2 are concerned,
 there is analogy between the payment of reparations and
 the export of capital. The answer seems to be that the
 analogy is partial and incomplete. In the lending country,
 the diversion of annual spending-power from expendi-
 ture on goods to expenditure on foreign securities fur-
 nishes a pretty exact analogy to the payment of new
 taxation; but in the borrowing country the expansion of
 buying-power does not come about in a manner analogous
 to the remission of taxation. In attempting to analyse
 how it does come about, we are, as so often in economic
 analysis, brought up against the difficulty of reconciling
 the conception of economic equilibrium with the phenom-
 enon of the growth of capital. But, broadly, we can
 either regard the expenditure of the proceeds of the
 annual flow of loans as forming an annual flow of
 spending-power *additional* to the money income of the

borrowing countries to illustrate this matter numerically, being distributed, in the assumptions. First, let us assume the members of a new and technique is in force in both countries forming part of an enhanced country the relation between; or we can adopt a mixture of quantities of money remaining in any case, on the assumptions and conditions as under the old technique, the following conclusions are representative of a man in each of capital export, unlike the same money balance in each country supposing the real ratio of interest expenditure on goods as unaltered, a flow of gold must have taken place to equalise the annual expenditure in each country; and from the fact that a flow of gold has taken place it cannot be argued either that there has, or that there has not, been a change in the real ratio of interchange and in the relative levels of the representative man's money income in the two countries.

*Germany.**America.**I. Original situation :*

Total income of £1,400 buys 1,300 *g* goods + 100 *a* goods.
Population 20, representative income £70.
Gold stock £1,400. $V = 1$.
Price of *g* goods = £1.

Total income of £1,000 buys 900 *a* goods + 100 *g* goods.
Population 20, representative income £50.
Gold stock £1,000. $V = 1$.
Price of *a* goods = £1.

II. New situation, on assumption of unchanged ratio of interchange :

Total income of £1,120 buys 700 *g* goods + 100 *a* goods + £480 *a*-securities.
Population 20, representative income £56.
Gold stock £1,120. $V = 1$.
Price of *g* goods = £ $\frac{4}{7}$.

Total income of £1,280 buys 900 *a* goods + 700 *g* goods.
Population 32, representative income £40.
Gold stock £1,280. $V = 1$.
Price of *a* goods = £ $\frac{4}{7}$.

III. New situation, on assumption that ratio of interchange is altered against Germany, becoming $\frac{8}{5}$:

Total income of £1,050 buys 612½ *g* goods + 100 *a* goods + £506½ *a*-securities.
Population 20, representative income £52½.
Gold stock £1,050. $V = 1$.
Price of *g* goods = £ $\frac{7}{8}$.

Total income of £1,350 buys 900 *a* goods + 787½ *g* goods.
Population 32, representative income £42½.
Gold stock £1,350. $V = 1$.
Price of *a* goods = £ $\frac{8}{7}$.

In the foregoing examples it is assumed that the loans are used, and are sufficient, to draw into employment at current rates of pay a new ^{in-duc-}ment of population which is not immediately productive of saleable goods, and the state of affairs portrayed is that during the *first* period of the new "moving equilibrium"—we cannot, as in the case of reparation payments, construct an example which will be valid year after year. And it is assumed, though of course this may not be the case, that the aggregate gold supply at the disposal of the two countries has remained unchanged.

§ 4. Now let us return to reparations, and examine Table III of § 2, in which the ratio of interchange turns against Germany. The turn of the ratio takes the form partly of a diminution of gross money incomes (as well as of "net purchasing-power") in Germany, but partly also of an increase of gross money incomes (as well as of "net purchasing-power") in America. To demonstrate, therefore, that gross money income ^{and} "net purchasing-power" have been raised in America, not (as seems sometimes to be thought) to demonstrate that a transfer-burden does not exist. It is true that for various practical reasons that burden may be more conveniently borne if it takes the form predominantly of an absolute rise of money incomes in America rather than of an absolute fall of money incomes in Germany. It is true also that, given the alteration in the real ratio of interchange, the sacrifice of consumption involved by the reparation payment itself (assumed to be fixed in gold) will be smaller the more the value of gold is diminished in America. But the champions of transfer-burden are right in maintaining that the degree of burden depends primarily not upon the *absolute* movement of gross incomes in Germany but upon their *relative* movements in the two countries. They are also, I think, justified in pointing out that since in practice the amount of money in "America" is likely to be large as compared with that in "Germany," the proportionate rise in gross incomes in "America" will, in fact, be small as compared

with the proportionate fall in gross incomes in "Germany."¹

§ 5. We may next consider the possibility that, concurrently with the beginning of the reparation payments, one or both of the countries will have relaxed the rigours of gold standard technique, in such wise as to permit an alteration in the factor V . Thus Mr. Keynes (*Treatise*, i. 337) discusses the two cases in which Germany is determined (i) to keep her gold stock unaltered, (ii) to keep the level of her gross money incomes unaltered, being prepared in either case to adopt such a banking-policy as will bring about the requisite relation between gold stock and money income: while America is assumed to adhere to her old rules. Mr. Angell, on the other hand, in discussing the case of a foreign loan, assumes that the banking authorities in *both* countries will be ready to alter their policy about reserve-ratios in such wise as to implement the loan. Thus he argues (*The Theory of International Prices*, pp. 402-12) that if borrowers in B are raising a loan in A, their representatives will, with the proceeds of the securities sold in A, buy bills upon B held by the banks in A, who will thus find their assets and deposit liabilities diminished, and will (apparently) be able to think of no way of increasing them again; while banks in B will be glad to expand the scale of their operations by buying the bills thus remitted to B from A. If we are considering a steady flow of capital-export lasting over a series of years, I am not clear either that this is a plausible account of the behaviour of either banking-system, or that the matter can be satisfactorily treated without recourse to analysis of the behaviour not of bankers but of income-receivers, on the lines set out in § 3. Nevertheless, we can so far adapt Mr. Angell's assumptions to the matter of reparations as to allow ourselves to consider a case in which the banking policy of *both* countries (and not one only, as in Mr. Keynes' case) is so modified as to obviate the necessity for any transfer of gold.

¹ See especially Keynes, *Treatise*, i. 341.

In all the three cases who call "flow", the real ratio of interchange is turned "abroad" against Germany by $\frac{2}{3}$, and a "transfer-burden" of this nature consequently exists, whatever has happened about the stock of gold. It will be noted that, as explained in § 4, the total sacrifice of consumption by Germany is greater the smaller the rise in the American price-level. The situation from which we start is that of Table I, § 2.

*Germany.**America.*

IV. *Angell-change* (gold flow unnecessary, both banking policies flexible).

Total income of £1,200 buys 560 <i>g</i> goods + 100 <i>a</i> goods and pays £600 taxes. Gold stock £1,400. $V = \frac{6}{7}$. Price of <i>g</i> goods = $\frac{6}{7}$.	Total income of £1,800 buys 900 <i>a</i> goods + 840 <i>g</i> goods. Gold stock £1,600. $V = \frac{9}{8}$. Price of <i>a</i> goods = $\frac{9}{8}$.
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V. *Keynes-change, i* (G. holds gold stock rigid, A.'s banking policy unchanged).

Total income of £1,000 buys 420 <i>g</i> goods + 100 <i>a</i> goods and pays £600 taxes. Gold stock £1,400. $V = \frac{5}{7}$. Price of <i>g</i> goods = $\frac{5}{7}$.	Total income of £1,600 buys 900 <i>a</i> goods + 980 <i>g</i> goods. Gold stock £1,600. $V = 1$. Price of <i>a</i> goods = 1.
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VI. *Keynes-change, ii* (G. holds incomes rigid, A.'s banking policy unchanged).

Total income of £1,400 buys 660 <i>g</i> goods + 100 <i>a</i> goods and pays £600 taxes. Gold stock £1,000. $V = \frac{7}{5}$. Price of <i>g</i> goods = 1.	Total income of £2,000 buys 900 <i>a</i> goods + 740 <i>g</i> goods. Gold stock £2,000. $V = 1$. Price of <i>a</i> goods = $\frac{7}{5}$.
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Thus we see once more that many statements can be made about the "flow" purchasing-power in the two countries which are quite irrelevant to the question of whether there is, or is not, a "transfer-burden" in existence.

§ 6. It is, however, one thing to show that the champions of "transfer-burden" are not proved wrong by certain statements about monetary purchasing-power,

and another thing to fall in with are right. Is it not at least *possible* that ordinary happenings should veil an underlying transition in the conditions of real reciprocal demand? Most champions of "transfer-burden" will, I think, concede that it is possible; for they will admit that under modern conditions the desire-schedules of population for foreign goods are to some extent susceptible to manipulation, and that a reparation-payment may be accompanied by organised attempts to manipulate them—for instance, by creating a collective desire in America for public works using German materials, or by propaganda in Germany against the use of foreign bread-stuffs. So far as this occurs, they will admit, the effect of the reparation payment on the real ratio of interchange cannot be considered in isolation, since there is an influence at work on the other side, operating, as the case may be, through a raising of the American real demand-and-supply curve or a lowering of that of Germany. They will, however, go on to point out that this is one of the matters in which the analogy between reparations and capital export is apt to be most treacherous. For in the nineteenth century at least (apart from the definite stipulations about the mode of expenditure of foreign loans which in some countries were common) it seems to have been something like a law of nature that the countries whose investors were rich enough to want to lend abroad were also the countries whose industrialists were ingenious enough to need, and enterprising enough to find, an expanding market for the products of large-scale industry; while the countries which were poor enough to want to borrow were also the countries which were sufficiently simple in economic structure to have a high demand for the specialised products of factory industry. Thus the needs of exporters, of importers, and of borrowers and lenders walked for the most part hand in hand in apparently pre-ordained harmony. It would be rash to make the same assertion about the post-war "reconstruction" borrowing of European countries; and it would be

those who call at "transfer-burden" are probably compensatory moves. But it is not clear that the underlying organisation, about which there is no doubt, is the same. But it is not clear that the influence working in the opposite direction—namely, the influence of the reparations—will be the same. Further, there may well be a tendency to buy the goods of the defeated enemy.

§ 7. Apart from such concessions, it seems to be usually implied by the champions of "transfer-burden" that the old real demand-and-supply curves must be thought of as remaining in force, and that the degree of the "transfer-burden" will depend on their relative elasticities at the original point of intersection. Only, it is tempting to add, in the extreme cases in which *either* the elasticity of German real demand for American goods *or* the elasticity of American real demand for German goods is infinite, can Germany escape *some* turning of the ratio of interchange in her disfavour.

So far as I know, however, only one attempt has been made to illustrate precisely the effect of payments of this kind upon the behaviour of the Marshall curves—an attempt by Marshall himself in discussing the effect, not indeed of reparations, but of annual interest payments; and it is, I am afraid, quite clearly unsuccessful. For Marshall deals with the matter geometrically (*Money, Credit and Commerce*, p. 349, Fig. 19) by shifting the starting-point of the curve of only one of the countries—that making the interest-payment—by a distance from the origin representing the amount of the interest-payment, while leaving the shapes of both curves unchanged. His construction exhibits the paradoxical results that (with "normal" elasticities—viz. greater than unity) imports into the interest-paying country are *increased*, and the terms of trade inevitably turned in its favour. Clearly this construction is not acceptable; but what are we to substitute for it?

The solution—partly suggested by Professor Pigou—

appears to be broadly similar in geometry, both curves must start from a common starting-point, and the transition in the utility that both must be not only shifted but most importantly towards one another. This represents the possibility that Germans, having in effect parted with a moderate amount of their goods for nothing, will not be willing to pay a given quantity of German goods for a given quantity of English goods as before; while Englishmen, having received some German goods for nothing, will be willing to offer so many of their own goods before for a given quantity of traded German goods. The fate of the real ratio of interchange depends on the relative degree of distortion of the curves, and it seems at first sight as if nothing more could be said about this—as if the deniers of “transfer-burden” were right after all, and the ratio of interchange were as likely to move in Germany’s favour as against her. But this turns out not to be true, for a reason which may be expressed briefly by saying that in all probability German goods have more nearly the character of money¹ to Germans than they have to Englishmen, and English goods have more nearly the character of money to Englishmen than they have to Germans. Hence there is a considerable balance of probability that the willingness of Englishmen to trade will be reduced more than the willingness of Germans, and so that the ratio of interchange will be turned against Germany. But it appears that, contrary to common opinion, the degree of the change cannot be expressed in terms of the elasticities of the original curves, though it can be expressed in terms of the utility and disutility schedules from which those curves are built up.

The position, then, can be summed up as follows. Even apart from changes of the type discussed in § 6, it is not *impossible* that the real ratio of interchange should move in Germany’s favour; and some of the statements

¹ Which can be surrendered or gained without leading to a change in its marginal utility.

that are made by those who call attention to the "increase of purchasing-power abroad" are probably to be interpreted as assertions that the underlying utility and disutility schedules in the two countries are such as to permit this to occur. But it is *not* true that there is no presumption against the schedules being of this kind; and many of the statements that are made about the "increase of purchasing-power abroad" are irrelevant to the question of whether they are *not*.¹

¹ This conclusion seems to correspond broadly with that of Mr. Keynes, as re-stated in the *Treatise*. But I am not sure that his method of treatment distinguishes clearly between the possibility that the American utility schedule is changed in a direction favourable to Germany (§ 6), and the possibility that it is, to start with, of a character abnormally favourable to Germany (§ 7).

WORLD FINANCE¹I. *The Domestic Tasks of Finance.*

I AM afraid the title of these talks—World Finance—will have raised false hopes in many breasts. The words sound so ominous and melodramatic: they conjure up such an alluring picture of shady characters, with diamond rings on their fingers and perhaps even false beards on their faces, sitting with lips glued to the telephone and weaving their nefarious webs about the world—selling populations into slavery and plunging continents into wars. Now this is not a wholly groundless picture of the operation of international finance, and before I have done I shall try to convey just how much truth I think there is or has ever been in it. But in the main I shall be concerned with much more humdrum and respectable matters. For what, after all, is finance? I think the best definition I know is that given by Mr. Hawtrey—that finance is the art of providing the means of payment. If we think over this definition carefully, we shall see two things. First, everybody wants to make payments of some kind or other, and finance is therefore an important thing, with far-reaching effects on the lives of quite ordinary people who are not financiers themselves and have never seen a financier in the flesh. But secondly, the actual process of making payments is quite a small and subordinate part of the whole business of production, trade and consumption. The really fundamental economic problems of the world—problems of population, of food supply, of capital growth, of industrial efficiency

¹ A series of talks given for the British Broadcasting Corporation, Jan.-Feb. 1931, and published in *The Listener*.

and organisation—are not in the main financial problems at all. Finance is only the handmaid of commerce and industry—a very important handmaid if you like—perhaps a kind of head parlourmaid. I do not say she never gets out of her place and behaves as if she were mistress in the house; and when she does she may want speaking sharply to. But for a start we shall understand her problems better if we watch her at her ordinary work—cleaning the silver and laying the table and answering the bell.

My subject is World Finance; but we cannot discuss everything at once, and I think we shall do best to confine ourselves at present to a study of the job which finance has to do within the frontiers of a single nation—and would have to do even if that nation were completely isolated from the rest of the world. For we shall find that this is a tricky job enough; and further, it is a job which does not depend on the world being cut up into a number of separate political units, but would remain to be done even if there were some day to be a single World-State. What *is* that job, reduced to its simplest terms? The essential point to grasp, I think, is that the job is a double one: and that the attempt to discharge both halves of it to the general satisfaction may lead finance into bogs and blind-alleys, the nature of which is not always understood, and from which it may be very hard to find ways of escape.

Let me try to explain what I mean. Broadly speaking there are, in this or any other country, two sorts of persons who want to make payments, whom we may conveniently distinguish as the “haves” and the “have-nots.” By the “haves” I mean all those who, by the sale of goods, the rendering of services, or perhaps merely by the inheritance of wealth—the difference is important in some connections, but not in this—have acquired legal rights over the current product of society and wish to keep some of those rights in a form in which they can be easily exercised—in a word, in the form of money. By the “have-nots” I mean, in this connection, not, as you

might suppose, the paupers and the unemployed, but a very different set of people. I mean the active leaders of trade and industry, who, while they may themselves be well off, are nevertheless so confident in their own abilities and so full of schemes for the further enrichment of themselves and the human race, that they are always ready to assume control over a larger volume of resources than they can provide themselves—in a word, they are always wanting to borrow money.

Now it is in the banking system that, for present purposes, we may regard the powers of finance as embodied; and it is to the banking system, therefore, that it falls to provide both these sets of persons with the means of making payments. But the nature of the task is obviously quite different in the two cases. What the first set of people want is facilities for keeping part of their own property in a particular form—the form of money, and for using that money at any moment they like and in any quantity they like, with complete assurance that it will be accepted by other persons, and that its value or purchasing-power will be what they expected it to be. Briefly, they want convenience, security, stability, in handling something which is their own. The second set of people—the active, pushful, tribe of borrowers—want something quite different. They look to the bank to provide them with the means of paying for the hire of labour, the purchase of materials, even perhaps the hire or purchase of buildings and machines, which they are not able, or do not choose, to pay for out of their own resources or out of resources entrusted to them directly by the public. And their demands on the banks are apt to vary with the season of the year, with their estimates of the prospects of business—almost, one is sometimes tempted to think, with the state of their livers. What they want from the banking system is enterprise, responsiveness, elasticity in handing over to them control of resources which are not their own.

Now, looking at it in the broad and in the large, the requirements of these two sets of persons are not neces-

sarily in conflict with one another—indeed, they often dovetail in together reasonably well. If it were not so, the head parlourmaid would never have been able to make the house of industry so tidy and comfortable as, on the whole, she has. For what really happens is that the “haves” are handing over to the “have-nots,” through the machinery of the banking system, a part of those claims on the product of society which they do not for the moment wish to exercise; while in return the banking system provides them, in the form of what we call a currency, with a secure and economical means of presenting on their fellow-citizens those claims which they do wish to exercise. In other words, a part, though not a very large part, of the saving which society has done in the past has been handed over to the banks to deal with, in return for the provision of monetary facilities: and, by co-operation between the banks and the borrowers, this saving has been transformed into real agricultural and industrial and commercial capital—into growing corn, and shirts on the loom, and toys in the shop-windows—perhaps partly even into ships and engines and houses.

In a primitive banking system this process is easily seen at work. A saver carts some golden coins into a bank, and the bank lends them out to a trader, who uses them to hire additional labour and expand his business. Meanwhile the bank gives a receipt to the saver for his coins, and if this receipt is nicely got up and cut up into bits of appropriate size it is called a set of bank-notes, and can be used by the saver to make payments with, as and when he requires. But a modern banking system knows a trick worth two of that. When it lends to a business man, it does not hand him over golden coin, but opens an account for him and gives him the right to draw cheques on itself. And it is not at all easy to see by the light of nature whether, when a bank acts in this way, it is, as one is tempted to think at first sight, performing an act of black magic, or whether, in spite of appearances, it is still really merely acting as an honest

broker between people who have made savings and people who want to use them.

The main principle is not difficult, I think, to make plain. There is no doubt that, when a bank adds to the total of its loans and investments, it increases the supply of buying-power by creating a deposit in favour of the persons to whom it makes the loans or from whom it buys the investments. Yet, in spite of appearances, it is simply acting as an intermediary, provided its action is balanced by an increase in the savings committed to its charge by the general public. The difficulties begin when we ask, "Where shall we look for evidence as to whether there has been such an increase or not?" In a more primitive community, as I hinted just now, it would be natural to ask whether people have been carrying coins into the bank for safe-keeping. But in a modern Anglo-Saxon country it is more important to ask whether the "haves," the people who keep balances with the banks of their own right, have been showing increased reluctance to draw on those balances either for purposes of personal expenditure or for purposes of direct investment in trade and industry. Let me give an illustration. I am lucky enough to have a balance in my own right, at the Westminster Bank. Suppose that I now become too economical to spend that balance as freely as usual on my personal wants, and at the same time too nervous about the future of the stock markets to buy an investment. I am increasing the amount of saving which I am entrusting to the bank. Yet I am not putting anything into the banking system that was not there before. The total deposit accounts of the banking system have not been increased by my action in any way: all that has happened is that they have become more sluggish, and move less rapidly from hand to hand. But it would seem to be quite right and natural that in such circumstances the banking system should take advantage of my increased willingness to commit resources to its care, by increasing the volume of its own loans or investments. Thus, whatever the exact mechanism by which

it works, the banking system will be acting as an honest broker if it succeeds in converting into real industrial and commercial capital just so much saving, and only so much, as the public is committing to its care.

But it does not follow that this result will be easy to achieve, for the temperamental race of borrowers, who come to the banks for loans, will not worry very much about how much saving the public is entrusting to the banks. If the prospects of trade seem to them to be good, they will nag and worry at the banking system for loans, and will call it hard names if it does not dish them out freely. While if they are out of heart themselves, it will not concern them that the banking system has got a plethora of savings to dispose of, and is, in this country at all events, for what seem to it good and sufficient reasons, reluctant to launch them itself in industry by the purchase of industrial shares or the promotion and flotation of new issues. So in trying to adjust its actions to the whims of borrowers—to be responsive, in the common phrase, to the needs of trade—finance will be in danger of failing to act as an honest broker—in other words, of failing to preserve equality between the savings committed to its charge and the increment of real capital which it helps to create.

Poor Head-Parlourmaid Finance! You see now what a difficult situation hers is. For sometimes there is a whole host of borrowers ringing at the front-door bell—Mr. Farmer, Mr. Merchant, Mr. Manufacturer, and the rest; and Mrs. Thrift, sitting within in the parlour, has forgotten to order any food. So the parlourmaid has to keep the crowd from the door—by sharp words, by raising the standard of the tips she demands, by any device that occurs to her. And sometimes there is tea laid for fifty, and nobody calls, and all the good food is wasted: for the parlourmaid has been strictly brought up, and knows, or thinks she knows, that she ought never to give food away to casual passers-by.

What will be the evidence and measure of her failure? The answer, provided at all events we assume there is no

great change taking place in the level of industrial efficiency, is very simple. The failure of Finance will be traceable in the movements of the price-level. If she is indulging borrowers beyond the capacity of her store of real savings, prices will rise, under the impact of the demands of those borrowers, and of the persons from whom they buy materials and labour. The savings which the members of the public would not make voluntarily are extracted from them compulsorily in the form of a diminished purchasing power of their money incomes. While if Finance cannot find a way to use all the voluntary savings of the public in increasing industrial investment, prices fall, and the savings of the public are all slopped away in the form of a cheaper cost of living all round. And in the latter case, that is not the worst: for with a fall in prices, if it is severe enough, come, as we are finding to-day, business losses and restricted production and rising unemployment.

So we see that the more responsive Finance shows herself to "the needs of trade"—the less she tries to assume control and rule the roost, the more certain she is to fail in her other task of providing a means of payment which is reliable and steady in value, and the more responsible she becomes for the damaging alternation of inflation and deflation, of trade boom and trade slump.

And as if all this were not enough, Finance has complicated her life still further by assuming another obligation—namely, to preserve a certain relation between the means of payment she provides and a particular commodity called gold. But of that I must wait to speak until we have had a glance next week at some of her international tasks.

II. *The International Tasks of Finance.*

Finance, you will remember, is the art of providing the means of payment; and among the payments which the people of a country have to make are payments to foreigners. These payments are of many different kinds, but we can conveniently divide them up into two broad

classes. First there are payments for things which are being currently consumed or enjoyed—for bananas and petroleum, for instance, and the services of foreign ships or foreign insurance companies. Secondly, there are payments connected with the making of new loans to foreigners, with the payment of interest on past loans from foreigners, with the discharge of old debts. The common feature of all these payments is that they have to be made in foreign moneys, while those who have to make them only possess their own domestic money; and it is one of the main jobs of Finance to provide people with facilities for obtaining the one in exchange for the other.

We have, I think, three questions to ask. First, what is the machinery at the disposal of Finance for doing this job? Secondly, under what conditions will this machinery work easily, and under what conditions will it be subjected to more or less severe strain? And thirdly, what must we expect to happen when it *is* subjected to strain?

About the first question I shall not say very much. Most people, I suppose, have heard something about that very old invention of Finance, the bill of exchange. An American who has sold cotton to an Englishman makes out a claim on the Englishman, or on some financial institution nominated by the latter, for so many pounds sterling. He sells this claim for dollars to his bank in America; and the American bank will sell this claim, which in due course can be turned into pounds sterling in London, to some American who has ordered machinery in England, and naturally has to pay for it in pounds. This is only one possible variant of what may happen: but I do not intend to go into the others, partly because there are a hundred and one books in which you will find them adequately described, and partly because it would be a mistake to give the impression that all or even the greater part of the dealings in foreign moneys are nowadays conducted by means of these trade bills. It is more important to realise that there is now a great variety

of financial institutions—including the ordinary banks which I referred to last week, but by no means confined to them—who have branches and correspondents in many countries, and who make it their business to keep bank balances in these various countries, and to sell the money of one country (often over the telegraph or telephone) in return for payment in the money of another.

Now for our second question,—what are the conditions necessary for the smooth working of this machinery? Well, I think one can see in a general sort of way by the light of common sense that this system will only work smoothly if, over a period of time which need not be a day or a week, but must not be inconveniently long, the demands of the people of each country for foreign moneys roughly balance the demands of foreigners for *their* money. Otherwise the financiers will find their supplies of some kinds of money piling up and of other kinds dwindling away, and a condition of strain will develop. What the nature and effects of this strain will be we will inquire into more closely later—that is our third question. Meanwhile, I want to say a little about some of the reasons why an upset in a country's balance of payments, as it is called, may come about, and so furnish international finance with a problem to tackle.

Some of these are connected with my first group of payments—those for services which are being currently enjoyed. Such a state of affairs is specially liable to occur in the case of a country which is very dependent, for its command over foreign goods and services, on the export of one, or a few, staple crops, as Brazil is, for instance, on that of coffee, or Australia on that of wheat and wool. For if the crop either fails on the one hand, or is so abundant as to cause a glut on the other—worst of all, if it is abundant in the world as a whole, but fails in our particular country, so that that country has to sell abroad a small volume at a low price—its claims on foreign money will be seriously diminished, while its desire to use foreign money may be as great as ever. And it will come crying to international finance to help it out of its

difficulties. Again, financial difficulties will arise if such a country deliberately keeps a large part of its crop off the world market in the hope of getting better prices later on, as Canada did in the autumn of 1929.

But difficulties may arise also with reference to the other group of payments, those connected with loans and debts. And this brings me to say something of a topic which, in popular opinion, and quite rightly, is closely bound up with world finance—the whole vast topic of foreign investment—that is, the placing of the savings of the people of one country at the disposal of foreign Governments, central and local, or their use for the development of the economic resources of foreign countries. You know that before the war Englishmen had something like £4,000,000,000 invested abroad—Frenchmen rather less than a half, Germans about a third of that amount. You know, too, that during the war we sold about a quarter of our foreign investments, especially those in America, in order to pay for war supplies, but have since brought them up to their old level, and are still lending abroad, in ordinary years, something like £100 or £150 million a year, or between a quarter and a third of our annual savings. Germany lost all her foreign investments during the war; France lost a great part of hers, because they were largely in Russia, and has been very reluctant to resume the habit of lending abroad. America, on the other hand, from being a borrower from the rest of the world, has become a lender on a great scale: her net foreign investments, excluding war-debt, are already about one-half as big as ours, though she is not now adding to them a greater annual sum than we are.

Now this matter of foreign investment can be discussed from various points of view—all of which, by the way, you will find most interestingly treated in a recent book called *Europe, the World's Banker, 1870-1914*, by an American, Mr. Herbert Feis. We can look at it from the point of view of the individual investor, and ask whether the additional gain which he has expected from investing his money abroad rather than at home has always

or often been realised. I have a friend, a clergyman, who lends all his savings to impecunious foreign Governments at high rates of interest, and gets away with it every time: he has recently bought an aeroplane out of the proceeds. But I think he is rather an exceptional case, specially favoured by Providence—at least I hope it is Providence; and when we look at the formidable list of Governments which have been at some time or other in default, we shall wonder if the game is always worth the candle.

Or we can look at the matter from the broader point of view of the general economic advantage of the investing country. From this point of view we shall conclude, I think, that in the past at least the greater part of our foreign investments has been wisely made. For they have been used mainly, even that part of them which has been lent to Governments, to develop railways, harbours, mines, plantations of all kinds in the overseas countries on which we depend for our food and for the raw materials of our industries, and whose populations furnish a market for our manufactured goods. But I think also—though this is a controversial subject—that we should be quite content that our new annual foreign investment is now on a smaller scale than it was before the war. For there is much that we should like to see done at home if only capital were cheap enough: there is perhaps an increased danger that what we lend abroad will be used to compete with our own industries rather than to co-operate with them; and with the increased financial strength of the United States and other overseas countries, there is no longer the same danger that, if *we* do not develop the raw resources of the world, they will remain undeveloped.

Again, we can look at the matter from the standpoint of the connection between Foreign Investment and World Politics and World Diplomacy. It is then that the black side of the story of Finance comes into prominence, and we begin to doubt whether she is really a parlourmaid at all, and not sometimes a bawd and sometimes a fury. For we see her prostituting her services

to governments in their struggle for world dominion, and begging for their support in courses which, whether she really desires it or not, can hardly fail to end in war. It is not easy for post-war generations to read the story of the French investments in Russia, or of the German penetration of Turkey, or of the scramble, in which our own country took part, for concessions in Persia or in China, without feelings of disgust and shame, or without inferring that the solid interests either of the borrowing or the lending populations, or both, were often sacrificed to idols of national power and national prestige. Yet when we judge the actions of the men of those times we must remember that the problem of which they made such a hash was a real problem, and one that has not passed away. It is the problem of how, without economic oppression of the weak or internecine conflict between the strong, to substitute government for chaos in the backward regions of the world, and to spread the benefits of civilisation without spreading its disorders.

Of this I shall have more to say in my last talk; but for the rest of my time to-night I want to consider Foreign Investment from a narrower point of view—from the point of view of the tasks which it imposes on Finance regarded as a machine and not as an independent force—as servant and not as mistress. And the point that I want to emphasise is this. Before the war there were various reasons why the making of the payments connected with foreign investment did not as a rule impose an excessive strain on the machinery of international finance. However much warped by politics, the whole process was in the main one of steady development, in consonance with deep-seated underlying forces. Thus, in the first place, those countries which were rich enough to lend were also mostly countries with a highly-developed industry, while the countries which were wanting to borrow were countries in a low state of industrial development. Hence it would come about that while some Englishmen were wanting to make payments to the Argentine, in fulfilment of their promise to lend her

money, other Englishmen had claims on the Argentine for payment for railway material bought out of the proceeds of the loan; and the two sets of claims could be made to balance out quite nicely without straining the financial machine. Secondly, the foreign investments of a country like our own had been built up gradually over a long series of years; so that while in any year there would be Englishmen wanting foreign money with which to make new loans to foreigners, there would also be foreigners wanting English money with which to pay interest to Englishmen. And while it would be an accident if in any year these two sets of claims were even approximately equal—as in fact they happened to be in 1913—they could always in some measure be set off against one another. Thirdly, taken as a whole, the borrowing countries were growing in power to produce wealth, and kinds of wealth which the lending countries wanted, so that it was not too difficult for them to pay the interest on their borrowings, and in some cases (such as Canada and Japan) to make a beginning at redeeming the principal out of the proceeds of the sale of their goods. Thus, in spite of its complex and ever-changing texture, the web of international indebtedness was woven without undue strain on the stomach of the Spider Finance.

From this picture the post-war picture differs in several ways, of which I must confine myself to pointing out one or two. First, the countries which have borrowed most in recent years have not been new countries in the process of development, but old countries brought to wreck by the war. Germany, for instance, has borrowed within a few years, for the reconditioning of her industry and the enrichment of her social life, sums the interest on which amounts to some forty-five million pounds a year. It is hard to feel confident that such foreign loans give rise automatically to a natural fund of exportable wealth for their service and repayment, as did, for instance, the loans made for railway construction in the Argentine. Secondly, America the great new lender, has become a lender very suddenly, and almost as

it were by accident and in spite of herself. She has found herself in possession of great and growing claims on foreigners, and being unwilling to accept settlement of those claims in the form of goods, she has had to leave them outstanding—in other words to become a permanent investor. And I think it is fair to say that her capacity to lend abroad has outrun, though perhaps only temporarily, her skill and technique in the difficult art of being a good lender. Thirdly, the natural course of lending is from the rich countries to the poor; but this has been complicated in recent years by puzzling cross currents of lending from the poor countries to the rich. Europeans, alarmed (as in 1922–26) for the future of their monetary systems, or dazzled (as in 1928–29) by the apparently glittering prospects of American industry, have insisted from time to time on trying to get hold of American money on a large scale, and thus added to the difficulties of the financial machine.

How these difficulties make themselves felt, and how they have been further complicated by the debt settlements arising out of the war and by the nature of our international monetary standard, I will discuss next week.

III. *The Gold Situation.*

You will remember that at the end of my first talk I said that the domestic task of Finance, which would be difficult enough in any case, is further complicated by the fact that she has assumed the obligation to maintain a certain relation between the means of payment she provides and the commodity called Gold. And last week I examined certain courses which, especially under post-war conditions, are liable to cause a strain in the machinery of making foreign payments, without, however, saying anything about the form in which that strain will make itself felt. This evening I want to bring these threads together by saying something about the operation of what is called the Gold Standard.

How do the banks, in a country such as England—for what I have to say would need certain modifications

if we want to apply it in detail to other countries—how do the banks arrive at decisions about the volume of loans and investments they make, and therefore of the means of payment they provide? The answer is that they act in such a way as to keep a certain proportion, prescribed by law or custom, between these means of payment and their cash reserves. But in these cash reserves they include not only what you and I would call cash, but the balances which they hold with the Central Bank of the country. Now the Central Bank can affect the amount of these balances by its own behaviour. Suppose, for instance, it sells me £100 worth of war-loan in return for a cheque on my bank, it will be able to dock my bank's balance with itself by £100, and my bank will have to cut down its loans or investments accordingly. And the reverse will happen if the Central Bank takes it into its head to buy securities in the market instead of selling them. It would seem at first sight then that in such a country the ultimate control over the total volume of the means of payment rests with the Central Bank; and this is an important part of the truth.

But it is not the whole truth; for in a country with a gold standard there are limits to the extent to which the Central Bank can exercise its discretion in this matter without getting into trouble. For a gold standard consists of two sets of rules. The first and more fundamental deals with the interchangeability between money and gold; the Central Bank is put under obligation to buy gold from all comers at a fixed rate, and also to sell it on demand at a fixed rate and under prescribed conditions. The second set of rules, the object of which is to ensure that the Bank is always in a position to obey the first, deals with the quantitative relations between money and gold. These secondary rules vary very much in different countries, and do not usually seem very well adapted to the object which they are supposed to serve. In England, for instance, the bankers' balances with the Bank of England, which, as I have tried to show, are the hub of the whole system, are not regulated by law at

all : instead we have a rule that all Bank of England notes in excess of £260 million must have a gold backing of 100 per cent.—a rule which is really a survival of a time, now passed away, when banknotes were the chief form of payment, and when people were entitled to change them into golden sovereigns on demand. In most countries it is the *proportion* between the Central Bank's gold and either its notes or its total liabilities that is regulated by law. This is not really very satisfactory either ; for, as has often been pointed out, it is rather like saying that in order to ensure that there shall never be a shortage of taxicabs, a certain proportion of the taxicabs in existence must always be standing on the ranks.

The upshot of the whole matter is that there is always a certain amount of *play* in a modern monetary system, of which a Central Bank can take advantage in framing its decisions about the quantity of means of payment which it allows to be created ; but that in the last resort this play is limited by the obligations imposed by the gold standard. Whether we think this a good thing or not will depend partly on whether we happen to like the looks of our own Central Bank. If we regard it as a stupid or weak-kneed creature, which is incapable of taking intelligent charge of events, or which is liable to put its money-creating powers too easily at the disposal of a needy Government, we shall be relieved that its capacity for mischief is kept within bounds by a golden chain. But if we have cause to think it not only public-spirited and disinterested but even possessed of the rudiments of a brain, we may well feel inclined to regret that it is thus hampered in discharging the primary domestic task of Finance—namely, the task of seeing that step is kept between the amount of saving committed to the care of the banking system and the amount of real new capital created with the banking system's aid. For it will easily be seen that under a gold standard it is quite possible for the public to be swamping the banks with savings, and yet for the banks to be unable to transform those savings into real industrial capital, because the country's gold

reserve is not sufficient to form the basis for an increase in their loans or investments. Equally it is quite possible, if the country is flush of gold, for the banking system to augment the volume of industrial capital without having been given any mandate to do so by the public. Thus prices rise or fall, and savings are stolen from the public or drip away down the drain, through the operation of that very gold standard on which our fathers relied to give us stability.

I must now try to connect up this matter of gold explicitly—there has been an *implicit* connection all along—with what I said last week about the difficulties that may arise, especially under post-war conditions, in making payments abroad. If the people of one country become abnormally anxious to obtain foreign money—whether in order to buy goods with it, or to pay interest with it, or to lend it on a foreign stock exchange—what will happen? For a start, the financiers who deal in foreign money will protect themselves by putting up its price—in common language, the exchanges will turn against the country in question. If there were no gold standard in operation, this process might go on a very long way, as we saw in the years after the war, and perhaps lead to the country's monetary system collapsing altogether: indeed it is just because of this possibility that most practical people are in favour of maintaining the gold standard, in spite of the objections to it which I have pointed out. But if there is a gold standard, the process cannot go beyond the point at which it becomes cheaper to buy gold from the Central Bank of the country, and send it abroad to be turned into foreign money, than to buy foreign money directly from the financiers. What happens next depends on how far the Central Bank is prepared to utilise the element of play of which I have spoken. For three months in the summer of 1929 the Bank of England allowed gold to ebb away to the United States and France at an enormous rate without ostensibly turning a hair; and something of the same kind has been happening again in recent months. But there is, as I have said, a limit to this element of play.

er or later, under the gold standard, the Central Bank have to see to it as a means of raising the rates of interest on loans and thus tempt foreigners to buy that country's money in order to lend it at the high rates. But this may be only a temporary cure: in order to effect a more radical one, the Central Bank may have, by the same rise in interest rates and other methods, to curtail the power of its citizens to buy goods, thus discouraging the import of goods into the country and stimulating their export, and so helping to restore equilibrium in the balance of payments. That is where the difficulties begin, as the Australians in particular, but not they alone, have been finding in recent months; for this process of curtailment of buying power is a painful one, involving a check to enterprise and to the formation of industrial capital, and bringing bankruptcies and unemployment in its train.

From this brief survey of the working of the gold standard there seem to me two opposite lessons to be learnt. First, neither the world, nor even the British Empire, is yet an economic family, and it's no use pretending that it is. We are not yet ready to see any one nation, by multiplying its own means of payment, draw indefinitely on the resources of the world. In so far as the gold standard is a means of pulling up with a jerk a nation which is trying it on, so to speak, it is performing a useful function which has got to be performed somehow. But, secondly, the gold standard sometimes seems to bring its elephants into battle when they would be better waiting behind a hill. If a number of Frenchmen or Americans get a fit of wanting to stuff their money up the chimney, or into General Motors shares, as the case may be, all the world has got to know about it. One is sometimes tempted to think not, as is often said, that the gold standard nowadays doesn't work smoothly, but that it works too smoothly—that gold slips to and fro across the sea on too small a provocation. Would it be better if, instead of going by aeroplane, as is increasingly the case, it were not allowed to travel except in the slowest and

leakiest type of sailing-ship in the world that seems too reactionary, here at least is a prospect. It is worth the attention of the financial doctors of whom I am to speak next week. Meanwhile we must not, I think, be too ready to blame the Australians because, rather than face the full rigours of the readjustment required, they have allowed themselves to slip gracefully a little way off the gold standard.

I must now say a word about another accusation which is being brought with increasing vigour against the gold standard. Under happier conditions, it is said, it might work perfectly; but unluckily at present, in the first place there is not enough gold, and in the second what there is is badly distributed between countries. Some great and respected authorities, such as Lord D'Abernon and Sir Josiah Stamp, are inclined to attribute to these twin causes a major share of responsibility for the present world depression. Personally I do not find it easy to go so far as that. Take first the question of distribution. America holds two-fifths and France one-fifth of the world's monetary gold—the former has about six times and the latter about three times as much as this country. In order to be fair to these two countries we must remember one fact about each of them. Judged by the test to which appeal has always been made in the past, the test of *proportions*, America does not come so badly out of it: the proportion of centrally held gold to total bank deposits is not much greater there than here—say 10 per cent. as against 6 per cent. As to France, it was inevitable and in the world's interest that her home price-level, measured in gold, should rise above the very low level at which it was left by the stabilisation of the franc at 124 to the £; and this naturally involved some importation of gold as backing for an increase in her note-issue. Nevertheless there are very real problems, connected both with America and France, which I don't wish to minimise and to which I shall have to recur. All I want to suggest at the moment is that their swollen gold hoards are a symptom rather than a cause of more

fundamental difficulties; and in particular that we can scarcely regard them as a major cause of the great world slump. For if they were it is hard to explain why that slump should have both started first and run its most riotous course in gold-stuffed America.

To turn now to the total supplies of monetary gold. Well, they are still increasing at the rate of 1·7 per cent. a year; and though that rate of increase will decline as the stock increases while the annual output declines, it will still, even in 1950, according to the best available estimates, exceed the 1 per cent. per year which is the estimated rate of growth of the world's population. I do not deny that the wastage of the South African mines, and the apparent unlikelihood of their replacement by any other comparable source of supply, means that there is a long-period problem of gold supply; though how pressing and urgent we think it will depend largely on whether or no we feel that as the human race becomes progressively cleverer and more efficient, so that the growth of *production* is progressively outstripping the growth of *population*, it is right and natural that prices should progressively fall. This is a matter on which there is a great deal to be said on both sides—much more, if I may be allowed to say so, than you would suppose from reading the remarks of some of our best-known experts, who seem to take it for granted without argument that gold ought always to increase in proportion to production and prices therefore to remain stable. All I am concerned to point out at the moment is that if we want to regard gold as the major villain of the tragedy of 1929–30, we must be prepared to explain exactly how the world would have been better off for having another £100 million of gold at its disposal, and what the most enlightened Central Banks would have found to do with it; and this neither Lord D'Abernon nor anyone else has done. It is my own belief that in a world glutted on the one hand with wheat and rubber and sugar and on the other with motor-cars, electric refrigerators and fifty-storey buildings, an aperient of £100 million extra

gold would have had but little effect. Will you tell me, please, if I am right?

IV. *Financial Doctors.*

I have now to give an account of some of the attempts at combined doctoring of the financial sores of the world which have been made during the last ten years. But before doing so I must say a little about one great sore which I have twice alluded to but have not yet found time to discuss, the sore called Reparations and War Debts.

You will not expect me to give even a brief résumé of the sordid and tangled history of the controversy over German Reparations. (Those who are interested will find a lucid and lively account in a recent book called *Reparations Reviewed*, by Sir Andrew McFadyean.) I must content myself with pointing out what seem to me the three outstanding features of the situation as it exists to-day.

The terms on which Germany surrendered in 1918 included reparation for all damage done to civilian populations and their property by German aggression. During the course of the Paris Conference a very high-minded man, President Wilson, was finally persuaded by an equally high-minded man, General Smuts, that this phrase could be extended to include compensation for war pensions and separation allowances, thus nearly trebling the magnitude of the claim. The value of the claim, as thus interpreted, was estimated by a French politician in 1919 at £11,000 million, and by the official Reparation Commission two years later at £6,600 million: the capital value of the settlement now in force is estimated at only £1,850 million. For, in practice, in the years that have passed, the sums demanded from Germany have come to be bound up more and more closely not with civilian damage (though this still, and quite rightly, plays a large part in France's demands) nor with the more general costs of the war, but with the obligations of the victorious countries to pay interest on their debts to one another. Britain, with, as some think,

questionable wisdom, gave her countenance to this principle in the famous Balfour Note of 1922: officially, America at one end of the scale and Germany at the other have never recognised it, and they have logic on their side. For logically it is nothing to the Americans how we and the French get the money with which to pay them, and logically it is nothing to the Germans what we and the French choose to do with the money they pay us. But logic or none, the facts under the present settlement, in very round figures, are as follows. Over the average of the next thirty-six years Germany is to pay £20 million a year to England and £80 million to the rest of Europe. The rest of Europe is to pay between £15 and £20 million to England and £30 million to the United States. England is to pay £35 million to the United States. More briefly, two-thirds of Germany's annual payment of £100 million is to pass indirectly to the United States.

It is clear that this stream of payments aggravates certain difficulties which I have mentioned before—difficulties arising out of America's power to sell goods and her reluctance to buy them, out of the relative *malaise* which she still exhibits in the new rôle of a great permanent foreign investor, out of the tiresome cross-currents which lead the inhabitants of less favoured countries to seek to invest part of their wealth within her borders. Logic or no logic, it seems likely that the time will come when official America will recognise, as many individual Americans have done already, that there *is* some relation between Reparations and War Debts, and between both and the troubles of World Finance.

That is the first outstanding feature of the present situation. The second, and it is a very puzzling one on which to try to form an opinion, is the present position of Germany. Roughly speaking, for the immediate future, the German nation has got to make annual payments abroad of £85 million for Reparations and some £45 million for interest on private and public loans. Towards this she can find about £15 million by the provision of shipping and other services for foreigners;

the remaining £115 million she must provide either out of a surplus of exports over imports or out of new borrowing abroad. How far can she rely on the former method, and how far must she have recourse to the latter? And in so far as she is driven continually to attempt the latter, what are her prospects of success? A few years ago Germany's imports were exceeding her exports to the tune of £100 million a year; and in the aggregate, since the Dawes Plan came into force in the autumn of 1924, she has probably borrowed (as a nation, of course, not as a Government) nearly twice as much as the total of 500 odd million pounds of Reparations that she has paid. But in the last year or so a striking change has come about: Germany's foreign borrowings have perforce been restricted: and simultaneously her exports have come to exceed her imports by some £90 million a year, thus affording some support to those who have always urged that if Germany were deprived of the resource of foreign borrowing she would find some means of paying her way without. But this export surplus of £90 million still leaves Germany under the necessity of borrowing abroad; and it has only been obtained by means of extreme pressure on the German economy, the possibility of continuing which is uncertain, and which has led already from time to time to alarming political reactions.

Further, we must take into account the third outstanding feature of the present situation—the fact that all these obligations of which I have been speaking are reckoned in gold, and that their effective burden in terms of commodities has, therefore, been materially raised in the course of the last year. I ventured last week to cast doubt on the view that gold-shortage is the prime cause of the world-slump, as well as on the view that it is unnatural and unhealthy for prices to fall in a progressive world. But I must not be understood to deny that, whether the cause lies in gold or elsewhere, the effects of such a swift and violent fall in prices or rise in the value of gold as we have seen this last year are very damaging from many points of view, and among others

from the point of view of international indebtedness. Germany was protected under the Dawes Plan against just such an eventuality as has now occurred: but not knowing, any more than the rest of us, what was coming, she surrendered that protection in the settlement of 1929.

While it would be wrong to speak as though Germany's position was already desperate, I think we can hardly doubt that sooner or later, and perhaps sooner rather than later, the financial doctors will be summoned once more to the bedside of the Reparation Settlement and will advise another operation. Of the work of this particular set of doctors I must say no more, except to put on record that I think we ought all to take our hats off to them—and especially that most genial and patient physician Dr. Stamp—for the wise and skilful, if necessarily tentative and incomplete, purgings and hewings which they have administered in the past.

For the rest of my time to-night I would rather speak of the work of two other panels of financial physicians, closely connected, indeed, both in personnel and in general outlook with the Reparations doctors and with each other, but each responsible for its specific contribution to the slow process of clearing up the post-war mess. I allude to the expert advisers—the so-called Financial Committee—and permanent officials of the League of Nations, and to the Central Bankers of the world. Of the work of the former you will find an excellent short account in a pamphlet recently issued by the League called *Principles and Methods of Reconstruction Work*. I can do little more here than remind you how in 1922, while sensible talk or action about the German question was still taboo, the League of Nations got to grips with a smaller but even more urgent matter, and with the aid of an international loan set Austria, then on the verge of dissolution, on her feet, and helped her to restore herself within a few years to financial stability and independence. Two years later it performed a similar service for Austria's neighbour, Hungary: and, again

with the aid of international loans, it assisted the Greeks and the Bulgarians in the difficult task of swallowing and assimilating great hosts of refugees, and later in tidying up their monetary systems. These things have passed into history, and it is not to be expected that the future will offer the League many opportunities for precisely similar work; while the Financial Committee itself, in a recent report, has been at some pains to discourage the idea that it will be, as a rule, the appropriate mechanism for the arrangement of loans for purposes of general economic development. The question for the future is rather whether the lesson of the striking difference between the history of the League loans and the history of the loans made to distressed Governments before the war cannot be learnt in such a way as to make the smell of International Finance sweeter in the twentieth century than it was in the nineteenth. For the League loans, unlike some earlier loans, left the borrowing Governments with both the means and the incentive to carry on a decent administration, and they gave the creditors, even in the worst event, no right to appeal to the use of force.

Of that I shall have a little more to say next week; meanwhile I must say a word about the remaining medical panel, the company of Central Bankers. The actions and movements of this troupe are shrouded in so deep a mist—which lightens, it is true, at intervals to disclose them clambering down the side of an Atlantic liner—that it is not possible for the outsider to say much that is useful about them. Yet we know that some at least among them have laboured hard for the financial reconstruction of Europe—our own Governor Norman among the first, and sturdy, pugnacious Dr. Schacht, and wise, wary Governor Strong of New York, who saw that the best way to help the distressed American farmer was to restore the consuming power of Europe, and whose untimely death in 1928 has perhaps cost Europe, as well as America, dear. It may perhaps be suggested that the doctrine, elevated in the days immediately after the war to the dignity of a copy-book maxim, that Central

Banks must be independent of their Governments and of public opinion, can be carried too far. Dr. Schacht, who resisted this doctrine when the Dawes Committee tried to enforce it on Germany in 1924, was later hoist with his own petard. It became plain in 1930 that the Reichsbank could not be allowed to have a policy which was at variance with that of the German Government on an important international issue, and Dr. Schacht had to go. In England as a rule we rub along very nicely without inquiring too closely whether the ultimate fount of financial policy is to be found in Downing Street or Threadneedle Street. But even we may be tempted to hold that while the execution of policy must remain a matter for experts, its broader aims and purposes ought now to become increasingly a matter for public discussion, and even public control.

Meanwhile there is at least one thing that the public has been allowed to know. The Central Bankers have got a new club. It is situated at Basle and it is called the Bank for International Settlements. The Reparation Doctors at Paris in 1929 wanted something to talk about until they knew each other well enough to discuss the thorny topic of figures: so the International Bank was born. The French wanted it because they hoped it would help them to mobilise their share of the German indemnity, that is, to substitute progressively a debt by Germany to private investors in all countries for a debt to the French Government. The Germans wanted it because they hoped it would help them in bringing about the necessary expansion of their export trade. The British wanted it because they hoped it would help to solve the gold problem, about which they were already seriously concerned. How much it will be able to do in any of these directions remains to be seen: but a beginning was made in 1930 with the first. About £2½ million of the German indemnity is now paid annually to private investors, who have lent money to the creditor Governments with which the latter have been able to extinguish some small part of their domestic debts.

Anyway, the Bank at Basle will be a more comfortable place for the Central Bankers to meet than rope ladders in the English Channel. Perhaps they will discuss, as the Financial Committee of the League of Nations has suggested, the question of gold reserves. If there is really a chronic gold shortage in view, they may be able to persuade each other that a 20 per cent. reserve against notes can be made to do as well as one of 40 per cent. They may even be able to persuade each other that under modern conditions the amount of gold a country requires depends less on the volume of its outstanding money of any kind than on its liability to suffer violent temporary changes in its need to make payments abroad. Meanwhile the Bank itself, which seems to be under very capable management and to have acquired control of assets measured in tens of millions, may be expected to make, indeed, has probably already begun to make, its own contribution towards smoothing the course of world finance. For not only does it act as a clearing-house and intermediary for reparation and war debt payments, not only is it charged with the important function of sending for the doctor if that should again become necessary, but in the ordinary course of business it has certain real, if limited, powers of preventing jars and easing strains. For while its published accounts are all expressed in Swiss francs, it both *owes* many different kinds of money and *owns* claims to many different kinds of money; and there need not be an exact correspondence between the amount of any particular country's money which it owes and the amount of that country's money on which it possesses claims. Hence if one country is being hard put to it for the moment to make foreign payments, and is in danger of losing gold, the Bank can come to its aid by buying its money, from financiers, with the money of some other country. It is commonly believed to have acted thus for the benefit of Germany during the alarums and excursions of last autumn. Whether this is the utmost we can expect from Dr. B.I.S. is a matter to which I will return next week.

V. The Future of International Finance.

Of the financial doctorings of which I spoke last week, some are concerned with matters, like reparation settlements and the restoration of disordered monetary systems, which, while it is unlikely that we have heard the last of them, are the heritage of an ever-receding past. Others, like the prevention of unnecessary gold movements and the easing of temporary strains, are likely to need performing in any future that we can foresee, but are, after all, of a rather menial nature. In this last talk of this series I suggest that we should shake our wings a little, and take another look at those matters of grave and abiding importance of which I spoke in my first two talks—the connection of Finance with the behaviour of the price-level on the one hand, and its connection with Foreign Investment on the other. I think we shall see that these two problems are really two facets of a single problem—the problem of the Organisation of the World's Savings.

It has been no part of my programme to give you a reasoned and scientific account of the causes of the present world slump; but I must try to tell you in a few fragmentary sentences roughly what I think about it. I think these slumps are a very natural feature of a world which is making very rapid advances in the technique of production, and which sets great store by material progress. Such a world can never be really stable, and does not wish to be; for it regards it as the normal and natural thing that its capital equipment shall grow out of proportion to any current growth in its population, so that the standard of living of its inhabitants shall continually rise. To this end it is prepared to save; but the difficulty is to ensure continuity in the rate at which the growth of capital equipment takes place, since for technical reasons the instalment of that equipment is often a lumpy and discontinuous process. You build a railway, or you electrify a railway already built, or you exploit to the full some new invention in the art of building; and while this

is going on, trade is active and employment is good. But the process comes to an end: the railway or the buildings are there, and will last for an age, but their utilisation gives rise to far less activity and employment than their construction, and you may have to be very nippy and resourceful in thinking of something else to do if you are to avoid a condition of temporary saturation and glut. The same thing happens with certain types of semi-durable consumable goods which are coming to play an increasing part in the modern standard of life. To take one example. During 1929 the United States increased her capacity for manufacturing wireless sets from a level of four million a year to a level of fifteen million a year. Not even the staunchest supporter of the B.B.C. will maintain that, even in America, such a rate of production, still less such a rate of progress, could possibly continue indefinitely.

But that is not all. When the standard of life is growing rapidly, the demands for all goods do not grow in proportion. In particular, the capacity of the human stomach is limited, and the need for elemental foods, such as wheat and sugar, may lag behind the general advance. And if this process happens to coincide, as it has lately, with revolutionary improvements in the arts of agriculture, there is saturation and glut not only in instruments and in durable consumption goods but in primary raw products as well.

It is no answer, I think, to this line of argument to say that in a slump there are millions of people unemployed who would be only too glad to buy wheat and sugar and wireless sets, and even to create an indirect demand for new ships and railways, if only they had the money. Their unemployment makes the glut worse, but it is because of the glut in the first instance that they are unemployed.

Are these things inevitable, or is there a way out? So far as I can see, there are only two possible lines of escape. One is to cure ourselves of the thirst for rapid material progress, and to concentrate on redistributing, in some

more equitable way, the aggregate of leisure which our present command over Nature puts at our disposal. That is perhaps the course which Buddha or Mr. Gandhi, to mention no other names, would recommend; but all that we know of the history of Western nations during the last few centuries makes it exceedingly unlikely that they will adopt it. The other alternative is to try to control the process of investment, and that is where finance, with its functions of the creation and transfer of the means of payment, comes into the story.

A few years ago I should have said that it would not be very difficult for the banking authorities of the world, acting in concert, to keep the process of capital investment within bounds, in other words to check and control a trade boom. I should have said that if they watched carefully enough the figures of prices and of employment they would know when, by raising interest rates or by rationing or by both, to discourage borrowers from applying for a further multiplication of the means of payment. To-day I do not feel so sure even about that. For one of the striking features of the present slump is that the period which preceded it lacked, both in England and in America, many of the familiar features of the pre-war boom, such as an acute rise in prices or an acute pressure on the existing labour-force. Early in 1928, when America seemed to herself and to others to be proceeding gaily on an even keel, I ventured to describe the condition of affairs prevailing there as one of "slump-like boom." For it had many of the features of a slump, in particular a marked tendency on the part of the public to flood the banks with savings, and a consequent tendency to sag in the level of prices. But it had also the essential features of a boom, namely, a rate of formation of capital equipment greater than can be continuously maintained. It was, therefore, not easy even in America for finance to see when to apply the brake; while no one has ever suggested that there was even a *prima facie* case for such action in England.

But it is the slump itself which sets finance the most

difficult problem. The need then is to recreate the spirit of enterprise, to chivvy sterile savings out of their lair in the books of the banks, to find new forms of capital equipment which can be created without adding to the glut. A year ago some people thought that a mere fall in the world's bank-rates—in the rates at which banks are ready to make temporary advances and buy bills of exchange—would do the trick. But it did not, and could not; for these rates only affect part of the world's business, and that not the part which from the present point of view is most important. The rates of interest on long loans remain high, because the public is not yet sufficiently confident to entrust its savings permanently to the industrial borrowers; while at the high rates thus maintained the industrial borrowers are not sufficiently confident to clamour for the use of the public's savings.

What can the banks do about it? Can they discharge faithfully in such a case their duty as brokers of savings unless they equip themselves to take a bigger and bolder hand in providing the means of payments not merely for the working capital of industry, but for its fixed capital equipment as well? That is a vexed question on which there is much to be said on both sides. I will risk saying two things, both of which are highly controversial. First, it seems to me that there is something in the complaint that we in this country are in some danger of getting the worst of both worlds in this matter. Our banks have not all, in fact, succeeded, as they are inclined virtuously to claim, in keeping clear of entanglement with the permanent financing of industry. But they have stumbled into it as it were by accident, without preparation or plan, and without the knowledge or the will to use their power over industry to compel reconstruction and reform. Secondly, I do not think that in any case, so far as home investment goes, private finance could or ought to be left to struggle unaided in the coils of the snake Slump. For those forms of capital equipment which are least likely to add to the glut are precisely those which can only be created on a large scale under the directive power,

and perhaps with the financial aid, of Government. I do not yet feel convinced that we ought not to be taking advantage of a plethora of idle savings and idle labour to tackle the housing problem on the lines suggested by Sir Tudor Walters in the House of Commons a few weeks ago. . . .

So far as home investment goes—for there remains as an alternative, or as a supplement, the time-honoured habit of investment abroad. Now I gave reasons in an earlier talk for not repining too much because our own foreign investment is on a smaller scale than it was before the war; and I do not recant. The world, as I have reminded you (though I'm not sure that Professor Toynbee would approve of my doing so), is not yet an economic family, and we cannot be expected to behave as if it were, or to sink our savings without limit in bottomless pits without caring whether we ever see them again. Short of world Communism, the sensible thing in the long run would presumably be for each country to decide on general grounds how much of its savings it is prepared to risk in the development of distant parts of the world, and to take steps either to utilise the rest at home, or simply not to make them and so to have a better time, or a quieter life, or a bit of both—however drastic the reconstruction of the social order which this policy would involve. To the Americans in particular I commend this idea as the long-term solution of their problems. But with our present social and industrial order, for getting out of a slump there is nothing like a whiff of foreign investment. Indeed, I think it could be argued that we have never in the past succeeded in escaping from the coils of the snake, except by the discovery, geographically as well as technically, of new worlds to conquer. From this point of view it is perhaps fortunate that the memories of investors are short, for it means that some countries, such as those of Latin America, can be rediscovered over and over again, as though Cortes and Pizarro had never lived.

So if you tell me that at the present moment it is non-

sense to say that the bellies of the Chinese are glutted with wheat or their valleys with railways, I shall not contradict you. And if you say that the best thing the powers of finance could do to help us out of the slump would be to organise in Britain, France and the United States a vast campaign of foreign investment, I shall say that you are probably right. Alone we are powerless, because of the pressure on our balance of payments that would result. But the financial institutions of these three nations, if only they could act in concert, could surely do a good deal. Indeed, I imagine that in the end this is what, in some form or other, will happen. My only doubt is how soon we can reasonably expect it to happen, and how much in the way of the puncturing of inflated hopes and the elimination of irremediably uneconomic production, both in manufacture and in the great staple branches of agriculture and mining, has first to be carried through.

One more question. In solving this problem of the organisation of the world's savings, how big a part can we expect to be played by the two prominent financial doctors of whom I was speaking last week—I mean the Bank for International Settlements and the Financial Committee of the League of Nations? The answer, I think, is "Directly, not a very big one." The bank is not very rich, as modern banks go: further, it is enjoined by statute as well as by common sense to pay some regard to the relation between the amount of its liabilities, and the amount of its assets, in any one country's money. That is to say, it is not, and it never will be, a magic machine for making poor countries rich or bankrupt countries solvent. At the same time, in so far as there exist in any country, as seems to be the case in France, technical as well as psychological obstructions to an expansion of the spirit of enterprise and foreign investment, it may be hoped that the Bank will find a way of exorcising them. Not to go into technicalities, there are certain useful things which the Bank of France is prevented from doing, but which the B.I.S. might see

its way to do with money borrowed from the Bank of France. And as the meeting-place and mouthpiece of the Central Bankers of the World, the influence of the B.I.S. may in the course of time be very considerable.

As to the League, as I have already said, it does not envisage itself as the normal instrument in future of international loans, even to Governments, for purposes of ordinary economic development. But I am quite sure that the creditors of the future will have to set themselves to learn a great deal from the technique of the League loans, if the political obstacles which at present exist to the recrudescence of foreign investment are to be broken down. For it is not only lenders who have become shy, but borrowers too. The resurgent nations of the East have no intention of going the way of pre-war Persia and Turkey, Morocco and Egypt. Unless international finance can be used to strengthen local administrations and not to starve them, to foster political independence and self-respect and not political disruption, the new nations will have none of it, and they will be right. In these matters, the spirit of the League will have to prevail, even if its machinery is not suitable for use: and, as it itself has recently suggested, it may have a part to play as arbitrator and conciliator between embarrassed debtors and indignant creditors, even though the future holds out for it no great career as an actual midwife for international loans.

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