INVESTMENT
AND BUSINESS CYCLES

INVESTMENT
and
BUSINESS CYCLES

BY

JAMES W. ANGELL

Professor of Economics, Columbia University

FIRST EDITION

McGRAW-HILL BOOK COMPANY, INC.

NEW YORK AND LONDON

1941

INVESTMENT AND BUSINESS CYCLES

THE MAPLE PRESS COMPANY, YORK, PA.

PATRI MEO
GRATIAS

Preface

We live in a money world. Nearly all our economic activities are carried on with money and are measured in money terms. This fact is so obvious that it is commonly taken for granted and then ignored, with little understanding or study of its true significance. Yet the whole economic character of the principal Western democratic countries of today is dominated by the role money plays in them. In largest part, production is not undertaken to meet the producer's own needs directly, but is undertaken in return for money, or the promise or hope thereof. In largest part, consumption is not consumption of the consumer's own output, but of other things he has bought with money. Exchanges are primarily exchanges of goods and services for money, not for one another. He who would save must chiefly save money, not the physical products of his own labor; and he who would invest must first command money, not materials or men. Real income, enjoyment, power, position, lands—anyone who wants them must obtain them, for the most part, by first acquiring title to money.

The modern money economy is only one of a number of possible methods of organizing the production and consumption activities of large groups of people who are economically dependent upon one another. An alternative method that was successful in the past was the method of the Egyptian and Roman Empires, which rested on a very stable admixture of social and political status, armed force and slavery. Another was the method of feudalism, which held people together in smaller but still substantial groups through a not wholly dissimilar blend of hierarchical status and force. Still another is the method of Soviet Russia today, which in somewhat varying degree has

preserved parts of the outward forms of the money economy while leaving the individual money holder little freedom in the actual use of money, and which draws the chief driving force for its economic activity from central plans and commands rather than from the voluntary economic choices of individuals. Whether the present military-totalitarian economies of Germany and Italy will endure long enough to be regarded as likewise successful, in this pragmatic sense, still remains to be seen.

The modern Western type of money economy, however, seems to be the only method for achieving massive economic organization thus far devised which will both work effectively where any large measure of freedom in decision and action is left to the majority of individuals, and which will yield the very large outputs characteristic of Western societies today. Whatever its other disadvantages, the physical productivity and the population-supporting power of the modern money economy are incomparably greater than those of, for example, the Roman Empire or feudal Europe. As a matter of historical fact, though perhaps not of logical necessity, the extraordinary transformation of the character and content of economic life witnessed in the last two hundred odd years was largely due to the opportunities provided by the introduction and development, in politically democratic societies, of the money-economy form of economic organization. Without this organization the technological advances, even if they had been effected at all, would in all probability have remained relatively sterile.

But the great advantages of the money economy inexorably bring with them its great defects. The price paid for the tremendous increase in the quantity and variety of products, which we can turn out under favorable circumstances, is that the vast majority of individuals have become inextricably bound up in and dependent upon the complex economic machine of which they are a part, and which they have helped to create. The majority of individuals do not produce goods

solely or chiefly for their own immediate consumption, as already remarked, and could not become thus self-sufficient if they would: they work for money. In itself, this has desirable results. It permits intensive specialization of production, and hence has been the proximate source of greatly increased outputs per man. The reverse side of the medal, however, is less reassuring. The specialization of individuals on making products which are intended to be sold for money, and of which the numerical majority are useless except when joined with other products—as in the case of the parts of a machine, or even the machine itself—means that if the potential buyers of the finished articles decide to stop spending *money*, the whole production process necessarily comes to a standstill. Worse, in that event the specialized worker suddenly finds himself not only out of a job, but left with nothing else he can do today or tomorrow to earn his living. The operation of the modern money economy, therefore, is dependent not only on the continuous receipt of money by individuals and by business enterprises, but also on the continuous *spending* of money.

Here lies the weak link in the chain. As long as any individual or group is currently receiving and spending money in amounts greater than the minimum required to support life, that individual or group always has the power to force a contraction in the economic activity of other individuals and groups, merely by reducing current disbursements of money on new goods and services. The richer and more prosperous the economy, the wider is the income-margin of certain individuals and groups above their minimum consumption needs. Therefore, the more violent and widespread is the contraction which they can bring about, however unintentionally, by reducing their current spendings of money on current output; and the larger is the number of other people who will be thrown out of employment by this contraction. It is not simply the uneven distribution of wealth and income which is here to blame, at least in the first instance. It is not even the institution of capitalism,

however defined, nor private ownership of the means of production. The weak link lies in the fact that in a money economy most finished products must be sold *for money*, and to individuals and business firms who in considerable degree have the option of ordering and buying or not, as they see fit. In the immediate sense, it is a failure to spend money, not any substantial collapse of consumption desires, any defects of technology or any avoidable bankruptcy of central planning and organization, that can and does precipitate the violent general contractions which from time to time engulf the Western money economies. To this extent, also, the classical writers were wrong. Money is not simply a colorless intermediary. The use made of money in modern economies evokes forces, working both for spectacularly rapid expansions and for spectacular collapses, which could probably never appear under an essentially non-money regime.

In modern societies, the component of total spending which fluctuates most widely in relative terms, which commonly varies first in time, and which in general seems to act as the trigger mechanism, is spending for investment purposes. The fluctuations in investment spending also appear to stand in a peculiarly close relation to the types of fluctuation in general business activity which are commonly described as business cycles. To examine this relation between investment spending and business cycles is the central purpose of the present book. In particular, the book will endeavor to show why individuals and groups who act in response to rational motives must necessarily vary the volume of their investment outlays widely from time to time, and why these variations in investment outlays, because of their effects upon national income and hence upon subsequent investment decisions, necessarily give rise to self-generating business cycles.

As a result of the large amount of statistical and analytical work which has been done in recent years, most students are now fairly well agreed on the reality of business cycles,

on their general statistical dimensions, and even on a number of the relations between their several components and processes. There is still a wide divergence of opinion, however, as to how and why business cycles come about. The present book is primarily concerned with this latter problem of explanation. It takes for granted the principal groups of commonly accepted facts which in combination we call the phenomena of business cycles, and sets as its main objective the construction of a general hypothesis to account for the facts themselves. In this sense, therefore, the book is largely speculative rather than statistical in character. It does not describe business cycles, something which many others have done in many ways, nor does it offer any substantial statistical analysis except within a few selected areas. Rather, it endeavors to explain business cycles; and in particular, to explain the self-generating component of general economic fluctuations of the business-cycle type.

The severity of business-cycle and other economic fluctuations in recent decades, the disastrously large *average* volume of industrial and commercial unemployment which they produce and the increasing popular intolerance of that unemployment have all compelled economists and statesmen to explore every conceivable solution for the urgent practical problems thus presented. A number of these proposed solutions, especially the use of the tax system and of government spending to counteract unemployment, are examined at various points in the present book. As intelligent citizens, however, we must face squarely and honestly the possibility that these solutions may not prove sufficiently powerful. If they do not, then in the not very distant future we shall also have to face squarely the problem of reorganizing our socioeconomic institutions as a whole—of reorganizing our methods of producing and distributing that flow of incomes to individuals which is the very reason for existence of all economic societies which operate under democratic principles. There is nothing inherently contradictory in the simultaneous maintenance of individual freedom, political

democracy and economic security. We can and must find equitable and workable ways of achieving and preserving all three of these major objectives.

To those of short vision, the tragic developments of the last year and a half may seem to have robbed these problems of any large current importance. The contrary is the case. Defense spending and other related measures will occupy a substantial and growing area in our economic life for a time, it is true, and will necessarily channel and constrict various types of business activity. Over the largest part of our economy, however, the judgments of individuals and of small groups of business managers on business and financial questions will continue to be the factor which chiefly controls the volume of our business activity. It necessarily follows, therefore, that many of the most important economic problems of the defense program and the post-war period—the treatment of taxation, private investment, potentially inflationary price movements and the like—can be handled intelligently and effectively only in terms of an adequate apparatus for understanding and dealing with the causes and consequences of changes in business and financial judgments. The analysis of these judgments and their changes is the very core of the present study. The final chapter applies the conclusions reached in earlier sections to a number of the urgent economic questions of today and tomorrow, and ventures concrete proposals on specific matters of practical policy.

My intellectual debt to the ideas of J. M. Keynes is self-evident. In the pages that follow, a number of Keynes's views are examined and criticized, but these differences over specific issues must not be misinterpreted. No English or American writer in the present generation has done as much as Keynes to forge new tools of thought in the monetary and business-cycle fields, to discover new problems and to quicken old ones, or to stimulate other students—whether from like-mindedness or from sharp disagreement—to further investigation.

I am also indebted to a number of friends for criticism of my own ideas, and for advice and material. In making such acknowledgments, it has become the common practice to explain that the friends whose names are cited are not to be understood as necessarily concurring in the author's own position. I beg to go further than this, and to say that some of my friends have expressed the most vehement disagreement with certain aspects of the views I have presented. The disagreements, by compelling me to re-examine the questions involved, have been particularly valuable. Those to whom my obligations are greatest, on one score or the other, are Professor Arthur D. Gayer, Dr. Harold Barger, Mr. C. Ashley Wright, and especially two of my former students, Mr. Wyllis Bandler and Mr. P. Bernard Nortman. I am similarly indebted, in connection with an earlier draft of the first half of the book, to Professors Wesley C. Mitchell and Alvin H. Hansen.

My wife has helped to correct a variety of typographical and other errors in the manuscript, and also in the proof sheets. The diagrams and charts were drawn by Mr. A. W. Naegels, and the typescript was prepared by Miss Kathryn L. Coyne.

JAMES W. ANGELL.

NEW YORK,
May, 1941.

Contents

INVESTMENT AND BUSINESS CYCLES

Chapter I

INTRODUCTION

I

THE recurrence of wide fluctuations in general economic activity, at irregular intervals of several years or more, is one of the most striking characteristics of all modern societies in which private property and capitalistic forms of production are dominant. These fluctuations bring with them wide changes in the volume of employment, the national income and the general welfare. They impose serious and often severe hardship on those classes that are least able to bear it. The fluctuations here in question can be grouped together under the broad term "business cycles." In Professor Mitchell's widely accepted description,[1] business cycles are "recurrences of rise and decline in activity, affecting most of the economic processes of communities with well-developed business organization, not divisible into waves of amplitudes nearly equal to their own, and averaging in communities at different stages in economic development from about three to about six or seven years in duration."

There is fairly general agreement among competent students both as to the correctness of this description of the main observable characteristics of business cycles and as to the extreme undesirability of many of their effects. Opinions are still widely divided, however, on the question of how business cycles actually come about and of what to do to alleviate them or to eliminate them.

Before any attack can be begun on these last questions, it is necessary to make more explicit just what it is that we are talking about. Both statistical measurements and a priori

[1] W. C. Mitchell, *Business Cycles: The Problem and Its Setting* (1927), p. 468.

reasoning indicate fairly conclusively that the fluctuations in general economic activity which we actually see are the complex resultants of the working of at least four different types of forces or factors. First, there are the familiar seasonal factors. Of these, nothing further will be said here. Second, there are long-run or "secular" factors, such as population growth or the opening up of large new areas for settlement and exploitation. The effects of these factors persist through several or even many business cycles, and produce relatively gradual alterations in the central trend of economic developments rather than sharp fluctuations within short periods. Third, there are "random" factors, which frequently exert large effects comparatively quickly, alter the pattern of one or two business cycles and then usually disappear. Such factors are crop failures or unusual plenty, political disturbances and most wars. Finally, there are the factors which constitute "the business cycle proper." These are the principal concern of the present study.

In the view of a number of students, business cycles are in essence simply the effect of the adjustment of economic activity to major changes which, in the proximate sense, originate outside the universe of strictly economic activity itself. The external, or "exogenous," factors of this sort most commonly cited have been large technical advances in production and distribution (in a broad sense of the term "technical") and, in other generations, meteorological disturbances. The adjustment to them is supposed to be quite imperfect at first; and in consequence, even if the external disturbance is not itself cyclical in character, several waves, or "cycles," of over- and under-compensation will be set up. But in due course, if all further external disturbance were to cease, business-cycle fluctuations would presumably die down and disappear.

We shall not adopt that view. Without making any attempt at statistical or other objective tests, we shall take it for granted that the essential characteristic of business cycles is that they are *self-generating* fluctuations, of such sort that

each process and phase leads on to the next in an unceasing, self-repeating round, and that in at least their broader characteristics the several recurring sequences are fairly uniform as between one cycle and the next. On this interpretation, secular influences, random factors, changes in techniques and the like may alter the duration, the amplitude, the intra-cycle trend and perhaps even some of the internal sequences of the principal components of actual business cycles, but they do not and cannot alter the essential and self-generating character of the cycles themselves.

2

The first half of the present study is concerned entirely with this self-generating cyclical process. We shall endeavor to construct a general hypothesis which can account logically for the appearance and working of self-generating business cycles, and which at the same time can be reconciled with the observed wide differences between one set of actual economic fluctuations and the next. In subsequent chapters, we shall investigate the factors that control various quantitative aspects of the processes and relations involved in business cycles, especially the relations between changes in the money stock and in the volume of new investment, on the one hand, and changes in the national money income and the volume of employment, on the other. Finally, we shall examine the application of the conclusions thus reached to various programs of governmental intervention in economic activity, especially deficit spending, and shall venture certain inferences as to the probable effect of the defense program and the probable course of subsequent developments in this country over the next few years.

This is the over-all plan of the book. Since Chaps. II through VIII constitute a rather closely knit body of argument, which is systematic in structure but in which only the more controversial questions are treated at length, it will help the reader to give here a somewhat more detailed advance outline of this argument itself.

The central problem set up in the first chapters that follow is an investigation of the factors which determine the volume of new private investment and its changes within relatively short periods, say a few weeks or months. In Chaps. II and III, it will be shown that the principal changes which take place in the volume of new investment within such "short" periods are due to changes in what we shall call the general level of economic "anticipations"—that is, in the opinions which business men and other potential investors hold about the probable course of business and general economic activity in the near-by and the more distant future. In Chap. IV, we shall show that under most conditions the current level of anticipations also controls short-period changes in total outlays on consumption, in national money income, in the size of the money stock, and in the distribution of this money stock between hoards and other uses.

Many people will probably grant the general validity of this analysis without argument. A number of students have insisted, however, that market rates of interest and the yields currently obtainable from the purchase of equities also play an important part in determining the current volume of new investment; and indeed this contention too seems plausible on "common-sense" grounds. In Chap. V, therefore, we shall examine the contention and shall reach the perhaps unexpected conclusion that, in most fields and at most times, *market* rates of interest and current equity-yield rates have little direct "causal" influence on the current volume of new investment. The question of what it is that determines these market rates themselves is likewise extremely important as a practical matter, and we shall hence devote a separate chapter to it; this is Chap. VI, in which it will be shown that in the short period, market rates too are governed primarily by the current general level of anticipations.

In Chaps. II to VI, we shall thus be concerned with the relations that run *from* the general level of anticipations *to* the volume of new investment in the short period, and to other important economic magnitudes. It is obvious, however, that

the level of anticipations is not simply something that exists in a vacuum, independently of other economic phenomena. In Chap. VII, therefore, we shall endeavor to explain short-period changes in anticipations themselves. It will be shown that in the absence of such large "external" disturbances as wars, crop failures and abrupt technological changes, the current level of anticipations is primarily governed by the size and changes of national money income in the fairly recent past, say the previous 3 to 6 months; and that the changes in income, in turn, are largely governed by immediately preceding changes in the volume of investment. We thus find that the relations between anticipations, investment and income form a closed chain. The chain is not a logical circle, however; we do not come out by the same door where we went in. On the contrary, these relations between anticipations, investment and income shift through time, and are of such character that they almost inevitably give rise to cyclical or quasi-cyclical fluctuations in general economic activity. Indeed, in the absence of "external" disturbances, the shifts in these relations *are* business cycles. The development of this "explanation" of business cycles is the first main objective of the present book. The explanation will be elaborated and refined in Chap. VIII, but its essential content will not be materially altered.

Many students will at once object that the first part of this inquiry, the study of investment, is at best unnecessary because J. M. Keynes, in his enormously valuable *General Theory of Employment, Interest and Money* (1936), has already given an adequate answer to the problem. In his account, the volume of investment in the short period is found to be governed by the interaction between the rate of interest and the schedule of marginal yields which are expected from new investment. Broadly speaking, the current volume of new investment is, hence, that volume for which the marginal expected yield equals the rate of interest. But even if the statistical and logical difficulties over the concept of "the" rate of interest be dismissed (they will actually be considered

later), I think it can be shown that the market rate of interest and the currently prevailing marginal expected yields from new investment are rarely equal, except by accident; and that even when they are equal, the market rate of interest, in most cases, plays only a minor role in determining the volume of current new investment. If this keystone of Mr. Keynes's short-period arch is pulled out, his whole short-period investment analysis must be reconsidered.

The demonstration of these latter propositions cannot be made briefly. The reader is therefore asked to suspend judgment on them, but to regard the possibility that they are valid as being great enough to justify a re-examination of the whole problem of new investment in the short period. At the end of the first main part of this positive analysis, the propositions themselves and their implications will be presented in more detail.

The chapters that follow are primarily speculative in character. They do not offer any detailed review of the large literature dealing with business cycles and related problems, since such a review would be a volume in itself; nor do they rest on any elaborate re-examination of the wealth of statistical and other factual material now available. The latter task, indeed, would be so enormous that no one investigator could hope to deal with it single-handed. What the first half of the present study undertakes to do is to clarify certain concepts and relations that are essential to any comprehensive analysis of business cycles, and then, as already stated, to formulate a simplifying hypothesis to account for the internal dynamics of business cycles themselves. This simplifying hypothesis is designed to point the way toward an effective organization and interpretation of the factual material.

Chapter II

THE VOLUME OF INVESTMENT IN THE SHORT PERIOD

I

WE shall begin our study of business cycles, to repeat, with an analysis of the factors that govern changes in the money volume of new investment in the short period. The reason for beginning with new investment rather than with the total of all business outlays, the volume of consumption, or economic activity as a whole has already been implied if not stated explicitly. It seems probable that in the absence of government intervention, fluctuations in the volume of private investment are the principal trigger mechanism which, in the proximate sense, bring about fluctuations in general economic activity itself. If we can explain short-period changes in new private investment, therefore, we can also explain most, though not all, of the short-period changes in general activity. The proof of the latter proposition is really inherent in the argument of the subsequent chapters, however, and will not be attempted at this early point. Our examination of the determinants of new private investment will not entail the introduction of any major elements not already recognized as important in current discussion. It will, however, lead to a reappraisal of the relative significance and the modes of operation of the factors involved, and of the conditions which in turn govern those factors themselves. In particular, the market rate of interest will be assigned a comparatively minor role under most conditions.

We now offer a brief analysis of these factors, which govern the volume of new private investment in the short period.

This analysis will necessarily seem rather formal at the outset. Its relation to the world of reality will appear, however, in subsequent chapters. In the earlier stages of the analysis, we shall use simple diagrams of those familiar types which are helpful in depicting selected aspects of "static" partial-equilibrium situations. Such diagrams and the equations they imply are admittedly inadequate, however, and can become quite misleading. This is true partly because they can present only a few variables at a time, but chiefly because they are incapable of showing the effects which a change in a given variable may subsequently produce, through the medium of other variables, upon the value of the first variable itself. Such reaction effects are the very essence of the dynamic process in self-generating cyclical movements. These simple types of diagrams can therefore be employed only with mental reservations as to the "reality" of the situations they portray.

The diagrams and the argument through Chap. VI relate either to instants of time or, at most, to short periods alone; the context will indicate which. By a "short" period is here meant, as just implied, a period so short that a change in a given variable has not time to react in significant degree upon the value of the variable itself. Chronologically, in the present case the "short" period is probably several months long. The diagrams also relate only to private investment made in pursuit of private profit; public investment will be discussed later. In addition, in the argument through Chap. VI, the actual wide differences within the various parts of the principal categories set up for study will be ignored. "The" volume of investment will be treated as though all types of investment moved together; and so for the other items.

Diagram I, below, is a preliminary representation of the short-period "demand and supply" of funds for making gross new private investment. Investment thus includes all purchases of new producers' goods, whether for repairs, re-

placements or net expansion, plus net changes in inventories.[1] Rigorously considered, the diagram is instantaneous. The time factor will be discussed later here, and also at the end of the next chapter.

The "demand" is the schedule of the weighted (highest) marginal expected yields for each volume of new investment. That is, it is the schedule of the net yields which prospective capital users currently expect to receive from successively larger volumes of contemplated new investment. In calculating these yields, the potential investor reckons in both the expected cost of new investment goods and his expectations as to future demands, prices, competition, rates of physical depreciation and obsolescence, and everything else that can influence his future profits. It will be suggested later that changes in the expected costs of new investment goods are usually less important, in altering the current volume of new investment, than the other sources of change in the expectations for profits. The "supply" is the schedule of the marginal expected yields which capital suppliers must expect to receive if they are to furnish each successively larger volume of funds for investment—regardless of whether the funds are obtained from savings out of current income, from previously idle cash balances or from money newly created for the purpose, as by the banks. The supply is governed, at each level of marginal expected yield, by the size of income, the propensity to hoard and the propensity

[1] It would be better, if data were available, to use purchases of materials and the like per unit of time rather than net changes in inventory. This would make the size of the unit time period irrelevant, as it should be and as it is for the other forms of investment, and would avoid the unreality of saying that new inventory investment drops back to zero when inventory purchases and sales of finished products have both risen in the preceding period and now remain constant at a high level. Also, inventory changes may be due solely to use in production or to sales of products to other producers or dealers, operations in themselves irrelevant to a study of changes in the *total* of new investment.

As will be suggested later, the difficulties with respect to time can really be avoided only by using the *rate* of investment. But this has disadvantages for the early stages of the discussion.

to consume (which depend, above what each individual regards as his minimum consumption level, on optimism about the economic future and on time preferences)[1] and, in the case of banks, on the operating cost of making additional commitments. Investment and "saving" are thus treated here *ex ante*, as planned magnitudes. There is an obvious unreality in forcing all demand and all supply into single categories in this way. The various classes of demanders, and especially of suppliers, may actually differ substantially in their motivations. But the procedure will serve as a first approximation, and it will later be shown to be not so very unreal after all.

The abscissa of the diagram is the volume of new investment funds, measured in currency units, which will be demanded and supplied at each level of marginal expected yield. The ordinate is the marginal expected yield of new investment when the general average state or level of anticipations (to be defined in a moment) itself remains constant. This yield may be broadly defined as simply the average expected net money return per year divided by expected money cost, including an allowance for any expected net appreciation or depreciation in value of the capital asset itself.[2] To make them commensurate, the several different kinds of investment must be weighted for differences in (1) estimated liquidity or shiftability; (2) expected risk, or the estimated chances that what is thought to be the most probable yield in the given case will actually be realized; (3) the time distribution of the expected yield, or the length of the period over which it is expected that the yield will be received and the expected distribution of the yield within that period; (4) the legal basis of the contemplated investment

[1] These propensities are discussed later, in Chap. X, Sec. 2, and XI, Sec. 3.

[2] Expected productivity, in the sense of the expected net value of the goods and services that a given capital asset will itself help physically to produce, plays a vital and usually the chief part in the calculation of expected yields. *Past* productivity is relevant only so far as it influences this calculation. But expected productivity is not the sole factor, since expected changes in the capital value of the asset itself also enter into the calculation and in some circumstances may dominate it.

(as, interest vs. dividends, debts vs. equities, securities vs. physical property) and (5) limitations on alternative investment uses (as in the case of funds accumulated for repair and replacement, which are unlikely to be sunk in the physical plant of another enterprise). These weighting factors are essentially subjective rather than statistical, of course, in the sense that probably no two individuals would arrive at exactly the same scale of weights in a particular case. That they have fairly definite meaning at the margin, however, is

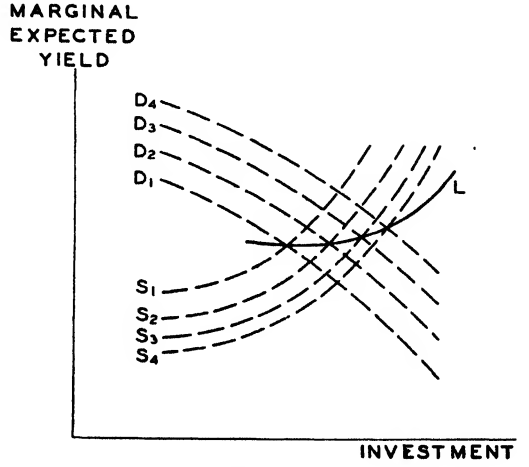

DIAGRAM I.

indicated by the persistence of quite stable orders of difference between the relative market valuations placed on the several types of investments. The relative attractiveness of nearer and more distant yields is governed by current time preferences, which are a component of the "general level of anticipations" discussed four paragraphs below.

All of the curves in the diagram are drawn on the assumption that the size of the population, the general character of economic tastes and the general techniques of economic production and organization remain substantially unchanged; that income is constant except so far as increased by investment itself (and the reactions from this latter increase are ignored until later); that no governmental or central-bank

interventions in private economic activity take place, and that such other "exogenous" factors as large changes in crop yields and international gold movements are inoperative. These assumptions will be continued through Chap. VI. In terms of the diagram, the assumptions mean that shifts in the demand-and-supply curves consequent on the operation of the factors enumerated are ruled out. The term "exogenous" is used to indicate that changes in the factors in question are not directly produced by the evolution of the self-generating cyclical processes described in later sections. The actual fuzziness of the distinction between exogenous and endo enous factors is not material for present purposes. The importance of the exogenous factors relative to the cyclical factors is discussed at the end of Chap. VIII, below, and in Chap. XIII.

The pair of curves D_1 and S_1 represent the demand-and-supply schedules at some one general average state or level of anticipations. Like any other demand-and-supply curves of the textbooks, these curves do not represent actual developments *through* time. Viewed rigorously, they depict only the future relations (and the future equilibrium position) which *could* develop on the basis of the situation which exists *at a moment* of time, say the present. That is, they are curves of the volumes of new investment which would be demanded and supplied at each level of marginal expected yield, on the basis of a given existing situation.

Moreover, every point on the supply curve can itself be regarded as a point of partial equilibrium for suppliers of investment funds, at the given rate of marginal expected yield; and so analogously for the points on the demand curve. Thus for any one supplier of funds, his own *demand* schedule is the schedule of marginal yields which he can expect to receive from successively larger investments of his funds. His own *supply* schedule is formed by the opportunity costs to him of the consumption and the money hoarding which he will forego if he actually does invest. For suppliers as a whole, each point on the curve S_1 is hence the point

of partial equilibrium of total supply at the corresponding rate of marginal expected yield. Analogous considerations apply to demand. For each demander of funds, his own *supply* schedule is the prices he must expect to pay for each quantity of funds, while his demand schedule is the marginal yield he can expect from each quantity *before* paying the supplier of funds (and with due allowance for risks). For demand as a whole, each point on the curve D_1 is hence the point of partial equilibrium of total demand at the corresponding rate of marginal expected yield: here the marginal expected yield to demanders of funds *above* the expected cost of funds is zero. At the intersection of D_1 and S_1, if the levels of anticipations are uniform between the several groups, demanders and suppliers as a whole agree as to the marginal yield that can be expected from the increment of investment currently contemplated.

We have hitherto used "the general level of anticipations" as a datum in the analysis. We must now explore this concept further.

One of the most important elements that characterize any given general situation is the current average level of anticipations. This average level of anticipations may be defined as the resultant of the operation both of the factor of average optimism about the economic future and of the factor of average time preference. By a change in average optimism about the economic future is meant a general change in *subjective* expectations about the future development of a present economic situation which has as yet changed but little *objectively*. It will be shown later, what is indeed plausible a priori, that subjective optimism does not change *in vacuo*. Some alteration, however slight, must first appear in the objective situation. The meaning of a change in average time preferences is obvious enough, though the measurement of these preferences and their changes offers puzzling problems. It is probably erroneous, though tempting, to assume that time-preference schedules are simply compound discount schedules based on current market rates of interest.

Actual market rates of different types and their movements differ widely (see Chap. V, below), and there is no good reason why any one of them should be thought of as "the" rate for this purpose. And although individuals are very careful in applying compound discount tables to alternative contemplated security purchases, the extent to which *this* criterion is applied in comparing consumption, investment as a whole and the holding of cash is uncertain. Rather, time preferences presumably vary with the optimism of each individual about the future and with his current need for liquidity. The education and skill of each individual in economic questions also play a part, as does the strength of tradition—as that 5 per cent is a "fair" return. The phenomenon is thus complex and not yet fully explored.[1]

On these definitions, either an increase in the present valuation placed on future goods, or the adoption (apart from time preferences) of a more optimistic view of future prospects for profits and the like, produces a rise in the average level of anticipations. In most circumstances, the two components of "anticipations" work in the same direction and can be treated in combination without differentiation. The exceptions will be considered later. It will also be assumed at first that anticipations of investors and of users of investment funds, and of the several groups within each category, move harmoniously. The effect of differences will be examined subsequently.

At any *one* level of anticipations, it seems probable that the demand curve for new investment funds is relatively elastic when the contemplated volume of new investment is relatively small, and inelastic when it is large. That is, it seems reasonable to think that when the current volume of contemplated new investment is very low, a small increase in this volume will produce but little decline in marginal expected yields. When this contemplated volume is currently large, however, and has already taken into account the in-

[1] On this difficult problem, which will not be considered further here, also see J. R. Hicks, *Value and Capital* (1939), pp. 220–224 *et passim.*

vestment opportunities that are currently most attractive, a small further increase in the volume of contemplated new investment will produce a relatively large decrease in marginal expected yields. It is also probable that the supply curve has roughly similar characteristics and hence a reciprocal shape (except in severe depressions, considered later). The reasons, however, are different. In the case of supply, when the contemplated volume of new investment is low, it seems likely (except in severe depressions) that a small increase in marginal expected yield will call forth a relatively large supply of investors' funds, since there are few alternative uses for them. But when this contemplated volume is large, estimated risks rise, the currently available supply of funds approaches prospective exhaustion, and the curve becomes inelastic. Moreover, the less expansible the money and banking system the more steeply will the supply curve rise as investment increases. With a fixed money supply, the supply curve approaches a vertical asymptote as investment increases, except so far as the population reduces consumption to increase investment.

The curves D_1 and S_1 of Diagram I are drawn on the assumption that the money supply is not indefinitely expansible and that the other conditions are as just suggested. The intersection of the two curves determines the short-period equilibrium volume and the prevailing marginal expected yield of new investment, at the given level of anticipations.

2

Now suppose that an increase takes place, for whatever reason, in the general average level of anticipations. In the short period as defined, with unchanged techniques, tastes and population, this means that a higher marginal yield than before is expected from each volume of contemplated new investment. That is, those who propose to use investment funds take a more optimistic view than before of the probable future course of product prices, costs, competition, obsolescence and the like and hence of the probable net

profitability of new investment itself. The demand curve therefore shifts, as from D_1 to D_2.

In addition, a larger volume of funds than before will be supplied at each level of marginal expected yield. This shift in the short-period supply curve, as from S_1 to S_2, is due to two things. First, the rise in general anticipations itself usually reflects a lengthening of time preferences. The purchase of assets with a particular expected rate of yield looks more attractive than before, relative to the use of given funds for hoarding or consumption, and hence more funds than before are forthcoming at each such rate. Second, what is probably of greater quantitative importance, the rise in general anticipations also reflects a rise in the optimism of the potential suppliers of funds, and hence in their estimates of probable risk. When the potential supplier's anticipations rise, his estimate of the *chances* that he will receive a given expected yield also rises (whether this yield be explicitly promised by the demander of funds or not makes no difference). For example, the marginal expected yield on new investment in a given field may currently be 5 per cent, and the potential supplier of funds may estimate today that he has 6 chances out of 10 of getting this yield. But tomorrow, at a higher level of anticipations, he may estimate the chances at 8 out of 10.[1] For this reason too, the potential supplier therefore becomes willing to supply larger sums than before at an expected yield of 5 per cent; he now estimates that the hazard is less. On both counts, his supply curve shifts to the right. These considerations apply both to the "voluntary" saver, who has balances of investible cash on hand, and perhaps even more forcefully to the banker, who creates additional funds by investing.

The rise in anticipations therefore increases the volume of new private investment in two ways. First, it shifts the demand curve to the right, thus pushing the supplier to the

[1] Compare the extended discussion of risks by H. Makower and J. Marschak in *Economica*, August, 1938, pp. 271 *ff.*; and by J. Marschak in *Econometrica*, October, 1938, pp. 320 *ff.*

right on any one supply curve; and second, it pushes the supply curve itself to the right. In addition, if the rise in anticipations is part of a general expansion of activity, income itself is increasing; and this usually makes still further supplies of funds available at each level of yield. The latter source of increase in supply cannot be legitimately introduced into an analysis of the short period as previously defined, however; it will be examined later.

If we now suppose still further increases in anticipations to take place, we obtain families of these short-period demand-and-supply curves for private investment funds, with each pair of curves corresponding to a given level of anticipations and with each pair determining a (short-period) equilibrium volume of new investment at that level. In Diagram I, it is arbitrarily assumed that successive equal increases in anticipations produce equal shifts to the right in the demand curves but produce diminishing shifts in the supply curves. The defense for the latter assumption is the fact that even with complete certainty that a given expected yield will be received, the volume of new private investment at that yield cannot be infinitely large and can be expanded only with increasing difficulty beyond some point. People must eat; and there are limits on the expansibility of most money and banking systems.

We may now connect the intersections of each demand curve with the corresponding supply curve. We then obtain a locus curve L, which indicates the short-period effects of changes in the general level of anticipations on the volume and marginal expected yield of new private investment. The shape and location of L are determined, of course, by the assumptions made about the elasticities of the demand-and-supply curves with respect to changes in expected yields, and about the elasticity of displacement of each demand or supply curve with respect to changes in anticipations—that is, about the extent to which the demand-and-supply curves will themselves be shifted to the right or left by a given change in anticipations.

Empirical studies may well suggest the assignment of other patterns of elasticity. Because of the actual rough limits on the expansibility of most money and banking systems, already referred to, L probably rises with increasing sharpness as it moves to the right—that is, as the boom develops (except in hyperinflationary situations like that in Germany after the war, where private investment operations based on expected yield ceased to be the principal factor in the expansion). If the elasticity of supply of bank funds with respect to anticipations is great in certain ranges of marginal expected yields and anticipations, however, these equilibrium yields and hence L may remain virtually unchanged or may even *decline* for a time, as anticipations and investments increase. We then have the phenomenon, paradoxical in pure statics, of a *larger* supply of investment funds being offered at the same or even a *lower* marginal expected yield. The explanation is, of course, the unequal shifts in the demand-and-supply curves here assumed to be produced by an increase in general anticipations, and the particular slopes assumed for the curves themselves. So far as market interest rates move with marginal expected yields,[1] they will show a similar curious behavior in this part of their range, which is the range of traditionally "respectable" rates for the given type of security—say 5 per cent. The left-hand portion of L is drawn to indicate these possibilities.[2] It will also be suggested presently that the curve for L is probably not strictly reversible as anticipations rise and fall.

[1] See Chap. V, below, on this relation.

[2] Compare the illuminating discussion of these points in an article by J. R. Hicks in *Econometrica*, April, 1937, pp. 152*ff*. But what Prof. Hicks's diagrams present is essentially demand-and-supply curves at a *single* level of anticipations. He does not attempt, in his diagrams, to distinguish between *movements along* schedules of marginal expected yields at a given level of anticipations and the *shifts* in such schedules produced by changes in anticipations themselves. His curve *IS* is hence not the same thing as the curve L above. But at a later point (*ibid.*, p. 158), he suggests precisely the effect indicated by the left-hand range of curve L.

Also see the suggestive discussion of these and related questions by T. de Scitovsky in *Economica*, August, 1940.

Moreover, the curve L (like the demand-and-supply curves themselves) cannot be regarded as an actual history of developments *through* time. Viewed rigorously, it too represents only the alternative future relations which could develop from the situation existing *at a moment* of time—these potential developments including, of course, changes in anticipations. This point will be amplified later.

The situation of the firm which contemplates plowing back part or all of its earnings in its own activities offers a case of great practical importance, but one which falls within the same general framework of analysis. Here the judgments and decisions concerning both demand and supply lie in a single set of hands. The position and shape of the supply curve are determined largely by the estimated attractiveness of alternative uses (including hoarding) for the firm's funds. The determination is usually not made, however, on the basis of a strictly arithmetical calculation. First, there is a natural predisposition to view one's own enterprise kindly and perhaps over-favorably. Second, and regardless of the immediate prospects for positive net returns, the firm must usually make certain outlays on repairs and replacements currently in order to avoid still greater sacrifices later, or even to continue in business at all. Finally, the "inertia value" of a going concern—the difficulty of withdrawing sunk capital intact, the vested interests of officials in their present jobs, sentiment and the like—commonly cause the firm's managers to keep it in operation by plowing back earnings long after a rational calculation by an outsider would indicate that larger net yields could be obtained by investing the salvageable assets in other fields. To the extent that these latter motivations are effective, the strictly rational analysis hitherto utilized is inapplicable.

3

Diagram I applies to short-period situations lying in perhaps the upper two-thirds of the business cycle. When the

general level of anticipations is extremely low, however, as in slumps and protracted depressions, the supply curve for private investment funds is probably extremely inelastic both with respect to changes in marginal expected yields and, in its elasticity of displacement, with respect to increases in anticipations. In other words, a relatively large increase in marginal expected yields will produce very little increase

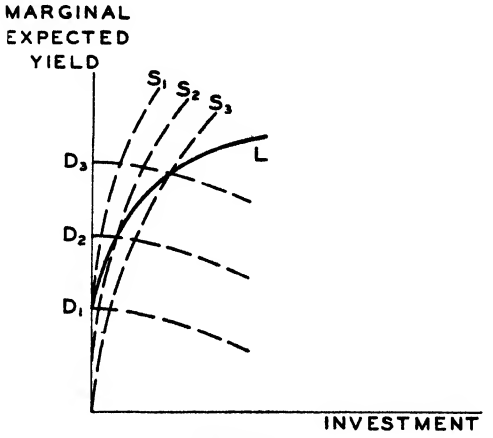

DIAGRAM II.

in the supply of funds offered for investment, on any one supply curve; and a relatively large rise in the general *average* level of anticipations, even though sufficient to shift the demand curve substantially, will produce very little shift in the supply curve itself. Thus it again seems probable that the effects of changes in general anticipations on suppliers are not the same as those on demanders. The shape of the locus curve *L* is then also affected. The situation as a whole is indicated in Diagram II.[1]

This situation is Keynes's Economics of the Slump. When anticipations have fallen sufficiently low, no small or even moderate change in marginal expected yields, as from moderate changes in factor costs or in techniques, will increase the current volume of actual private investment very much in

[1] Again compare Hicks, *op. cit.*, p. 158.

short periods. At the limit, *all* new private investment stops, even for minimal repair and replacement purposes, and expected yields (defined to include capital gains and losses) may become negative. Market yields on *existing* assets may remain substantial, however, even though expected yields from *new* investment are low or even negative. This point will be elaborated in Chap. V, below. Finally, in this situation, even a substantial rise in the general level of anticipations itself will not produce much initial increase in private investment, because of the inelasticity of the supply curve with respect to anticipations in this part of its range.

Two other comments may be made. First, since the abscissa of Diagrams I and II measures the money volume of new investment—that is, the money volume of new investment goods and the like, the purchase of which is now contemplated—investment as thus defined can never fall below zero. Actually, gross new investment never drops even to zero, for sales of new investment goods never wholly cease. Second, the frequently employed concept of "disinvestment" is not cognate with the concept of "investment" in the present definition. "Disinvestment" is essentially a bookkeeping concept, relating to the wearing out or obsolescence of plant and the consumption of inventories, and hence to something which is going on all the time. "Net" disinvestment is probably not calculable, for lack of adequate engineering norms and because technological changes are so frequent, and in any event is not a concept which will prove particularly useful in the present study. We shall make no further reference, therefore, to these concepts.

Chapter III

INVESTMENT AND ANTICIPATIONS

I

IF we continue to abstract from changes in techniques, tastes, population and other "exogenous" factors and from changes in income, then for each general average level of anticipations there is one and only one volume of new investment which will equate the demand and supply of investment funds in the short period as previously defined. We can therefore treat the volume of investment in these short periods as itself a function of the general level of anticipations, within the form-determining matrix of demand-and-supply conditions already examined. As previously suggested, the character and position of the matrix are determined by the current size and distribution of income and by the "exogenous" factors. All these determining elements, and hence the matrix itself, can be treated as substantially constant in short periods.

The volumes of new investment which would actually be made at different levels of anticipations, within the short period, are represented by the curve D,S shown in Diagram III. This curve is the counterpart of the locus curve L in the preceding diagrams and is drawn under the same general assumptions. In Diagram III, the level of anticipations, which is an implicit third dimension in the preceding diagrams, thus becomes explicit.[1] In strictness, however, the

[1] Any point on the curve represents an investment equilibrium in the short period as defined, *if* anticipations remain constant at that point and if no "exogenous" factors are in operation (this situation is analogous to the biochemical "steady state"). But it will be argued later that anticipations are actually never constant, even apart from "exogenous" factors; they are in a state of continuous

curve D,S—like the curve L—again represents only the alternative future relations which *could* develop from the situation existing at a given moment, not the actual course of developments through time.

This diagram is the simplest and most general way of summarizing the factors which determine changes in the volume of new investment in short periods. The position and shape of the curve are wholly governed, of course, by the

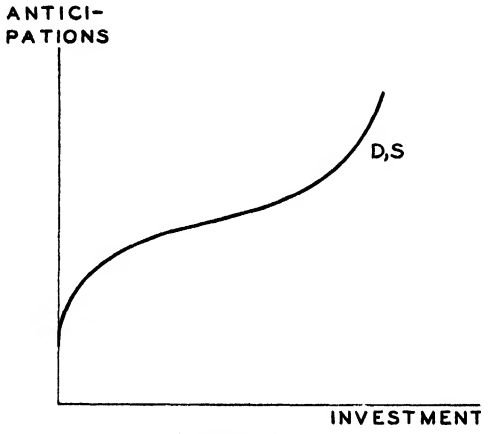

DIAGRAM III.

positions and shapes of the demand-and-supply curves previously examined. The diagram embodies all the information conveyed by Keynes's concept of the marginal efficiency of capital, advances anticipations to the central position in the determination of short-period changes in investment, treats supply symmetrically with demand and makes explicit the short-period mechanics of the slump, when there is no government or central-bank intervention.

---

self-generating fluctuation. In particular, Keynes's "underemployment equilibrium" is really only a phase of a continually changing situation, in which the rate of absolute change has for the moment been severely retarded.

Placing the letters D,S on the curve also carries no implication about the equality or inequality of "saving" and investment. The letters indicate only that the amount which would be paid for new investment goods equals the amount which would be received.

Diagram III does not, of course, make allowance for the fact that it takes *time* for a change in anticipations to affect the actual volume of new investment. At the beginning of the recovery process and through the expansion, substantial intervals often elapse between the making of an investment decision and the appearance of actual outlays on new investment goods. Here actual investment rises later than anticipations. When a downturn begins, on the other hand,

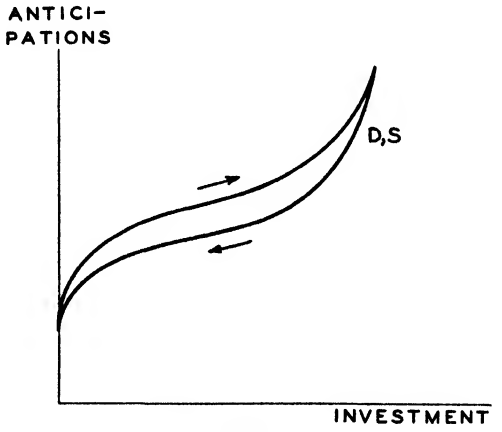

DIAGRAM IV.

many investment commitments are of such character that they cannot be terminated promptly, as in the case of uncompleted contracts. Actual investment then *falls* later than anticipations.

It therefore follows that the curve of investment with respect to anticipations may not be strictly reversible. If this be the case and if we suppose all other things equal, so that the depression ends where the previous recovery began, then in place of Diagram III we obtain the curve of Diagram IV for any one business cycle. This general pattern is quite similar to the graph of the revolutions per minute obtained from a motor, as the energy input (vertical axis) is con-

tinuously and rapidly changed from zero toward the motor's maximum capacity and back. For the motor, the lag is due to inertia; in this diagram, the lag is due to the average time interval intervening between investment decisions and actual expenditures. We need not inquire here if the curve is really asymptotic.[1]

The reader may object that this diagram is not on all fours with the diagrams and argument of the preceding chapter. In that chapter, the diagrams were treated as pictures of the potential future development of conditions existing at a given present instant of time, whereas in Diagram IV we are tacitly attempting to show the flow of actual events *through* a succession of different instants. It can hence be charged that this involves shifting our ground. On a rigorous view, the criticism is entirely valid, of course, and can be overcome only by introducing a time dimension in all the diagrams. The difficulty really arises only from the limitations of the diagrammatic apparatus here employed, however; it does not reflect a defect in the logic of the underlying argument. In the actual world, as will be shown later, anticipations are never constant, and the *direction* of their current change is a factor which affects the sizes of other variables as genuinely as the absolute current levels of anticipations themselves. What Diagram IV loses in internal logical consistency, therefore, it more than gains from its greater realism.

[1] The generally sigmoid shape of the curve is also analogous to that of the curves for various autocatalytic chemical processes, in which the early stages of the change in each direction are first accelerated and then retarded by the by-products of the main process itself. I am indebted to Prof. Edgar G. Miller, Jr., for this analogy. It will be shown later that much the same thing is true of the anticipations-investment relation, other things equal. The by-product here is changes in the rate of change in income. Finally, the statistical relation between changes in income and accompanying changes in the money stock offers an empirical illustration of a behavior pattern in certain periods quite like that depicted in Diagram IV (see Chap. IX, Sec. 4, below, and Chart III therein).

Kalecki has suggested a somewhat similar schema, in which the curve may or may not return to the starting point (*Review of Economic Studies*, February, 1937). Also see his *Essays in the Theory of Economic Fluctuations* (1939), p. 145.

3

We have thus far talked about "the general level of anticipations" as though this factor were uniform throughout the society and as though it were easily measurable in objective terms. Actually, of course, this is not the case.

It is obvious that anticipations may differ at a given time, not only between different individuals or groups but also with respect to the nature of the activities or objects with which the anticipations are concerned. For example, manufacturers' estimates of the prospects for increased sales of their own finished products in the near-by future may rise substantially, thus inducing them to increase working forces and inventories of materials, yet there need be nothing in the situation as they see it to justify plant expansion. Conversely, a rise in their estimates of the long-run prospects may lead them to start expanding their plants at a time when (as in depression) the volume of current business over the next few months is actually expected to decline.[1] Moreover, at any one time, certain individuals or groups may hold estimates of the prospects for the future, whether short-run or long-run, which are quite different from those held by other individuals and groups.[2] Indeed, it will be shown later that these differences are of crucial importance in explaining parts of the apparent internal dynamics of actual business cycles. Finally, because of differences in the time required to carry through different operations, the effects on new investment and general activity of changes in the average level of anticipations work out with varying lags in different sections of the economy. These differences will likewise be shown to be important in the dynamics of the business cycle.

These various dissimilarities are substantial and play a material role in the fluctuations of general economic activity.

[1] See the more extended discussion in J. M. Keynes, *The General Theory of Employment, Interest and Money* (1936), Chap. 5.

[2] Compare J. R. Hicks, *Value and Capital* (1939), pp. 133, 281, 296.

When we talk about "the general" or "the average" level of anticipations, we must not be thought to disregard them. But the mere fact that roughly synchronous movements in the great majority of business activities are a characteristic feature of all modern business economies is prima-facie evidence that the similarities in the changes of anticipations, as between particular areas or groups in each economy, are of far greater quantitative importance than the divergences. The similarities presumably apply to the direction of changes rather than to their degree, but they are great enough and widespread enough so that it is legitimate, when brevity is required, to speak broadly of changes in *the* general or average level of anticipations.

The problem of measuring changes in the general level of anticipations statistically is difficult. In an absolute sense, measurement is probably not now possible. There is no way of measuring either economic optimism or time preferences in complete abstraction from other factors. Relative to periods short enough so that changes in techniques, tastes, population and the like are presumably not important, however—periods of perhaps 6 to 8 months, possibly a year or more—evidence on *changes* in the average level of anticipations can be obtained from three sources.

First, within such periods, substantial changes in the general volume of actual new investment are themselves usually evidence of (prior) changes in anticipations, unless "exogenous" factors have been important. These short-period changes in investment do not give the *form* of the anticipations-investment relation, but at least it seems safe to assume that the general "trend" of the curve of Diagram III is never negatively inclined in the short period (though the curve itself may have a slight negative inclination in certain middle ranges, as already suggested). Second, in the middle and upper ranges of business activity, changes in the current market yields, or (perhaps better) in the current earnings-price ratios, of industrial and commercial equity

shares are usually a good *inverse* measure of changes in anticipations. They fall as anticipations rise. But in depressions, this is less true. Here the pressure for increased liquidity drives many individuals and firms away from physical assets into securities;[1] and because of this liquidity demand, current share yields may fail to rise in proportion to the drop in anticipations. A better guide to anticipations, therefore, would probably be obtained if the yields or earnings-price ratios were weighted by an index of the volume of stock-exchange transactions in shares. This volume is low in depressions, and can be regarded as a rough measure of the extent to which the anticipations of different individuals differ at any point in time.[2] Third, it will be shown later that the circular or income velocity of circulating money usually moves directly, and the relative size of hoards inversely, with changes in anticipations. The first magnitude can be measured directly and for some purposes provides perhaps the best single guide to changes in average anticipations.

These difficulties over measurement, however, are not of major importance in the theoretical argument. In a later chapter, it will be shown that, barring the "exogenous" factors, the general average level of anticipations is itself a function of the recent history of the national income, which is more easily measured. For a number of purposes, it can hence be dropped out of the analysis.

[1] They may also move from securities into cash or even, in panic situations, into such things as canned goods. The scale of liquidity preferences is discussed later (Chap. VI).

[2] If they were available on a wide front, data on current new orders would also be an excellent guide to business men's anticipations.

Current market rates of interest are *not* a good indicator of anticipations. When anticipations rise, some people move out of cash and into bonds; others from cash or bonds into equities; and others from all of these into physical assets—additions to plant and inventories. Depending on the relative volume and urgency of these several shifts, any one type of market interest rate may either rise or fall as anticipations rise and may react to such a rise in different ways in different phases of the cycle. Also, the general group of short-term interest rates is likely to rise toward the end of a boom, thus moving inversely with anticipations, whereas the current yields and earnings-price ratios on equity shares fall. Compare the footnotes on the behavior of market interest rates in Chap. V, Secs. 1 and 2, below.

4

Finally, no attempt will be made to find more precise solutions for the important formal problems connected with the treatment of time in the preceding diagrams. The diagrams themselves are merely a preliminary scaffolding which must be discarded later in the dynamic analysis, and the problems over time which they present bear on their validity as expository devices rather than on the substance of the underlying argument. Viewed rigorously, as already remarked, the first three diagrams represent only future relations which could develop on the basis of the total situation as it exists *at a moment* of time. They are, essentially, instantaneous cross sections of future potentialities at any such moment and in strictness cannot depict these potentialities at two different moments, since the situation changes between one moment and the next. For example, the elasticities of the demand-and-supply curves for new investment really depend not only on the factors previously indicated but also on how much investment has already taken place in the recent past; this will be considered later. Actually, however, it is probable that no very great factual error will be introduced if the diagrams are also treated as rough schematizations of the *history* of developments *through* the business cycle and of the potentialities which, at each point, lie on either side of the historical path actually followed, provided that abstraction is made from secular growth and other "exogenous" factors of change.[1] The fact that Diagram IV is really of this latter type was pointed out at the end of Sec. 2, above.

[1] For a careful examination of aspects of the problem of treating changes through time, see the recent book by Prof. Gunnar Myrdal, *Monetary Equilibrium* (1939).

Chapter IV

TOTAL OUTLAYS, MONEY STOCK AND ANTICIPATIONS

I

MUCH the same factors as the ones which control short-period changes in the volume of new investment also control, in the absence of governmental or central-bank intervention, short-period changes in the size of total outlays on consumption, in the size of the national money income, in the size of the money stock and in the distribution of this stock between what we shall call "hoards" and "active" uses. When an act of new investment has been performed, the proceeds flow to individuals and business firms as money income. This income may either be spent on consumption or on further investment, or be hoarded in idle cash balances, or be used to reduce earning assets of the banks and hence the money supply. These alternatives can easily be related, in the short period, to changes in the general level of anticipations.

Let us start with the extreme depression situation. Here new investment is extremely small, consumption and money income are very low, and any small rise in anticipations can produce but little immediate change in investment. With a larger rise, however, investment will begin to pick up (Diagram II). Even if consumption remains merely constant, money income will therefore rise too.[1] In actuality,

[1] For present purposes "money income" can be defined as the sum of all cash or accrued receipts from the production and sale of new goods and services, minus all cash or accrued payments to others for goods or services furnished to carry on these production-and-sale processes. The receipt or repayment of loans, capital gains or losses from the sale of existing physical assets or titles and the like are excluded. The definition of income is discussed in more detail in Appendix IV, below.

part of the money incomes received from the new investment may be used to increase hoards or decrease the total money supply, but part will usually be spent again, on consumption or on further new investment. The reaction on anticipations of this rise in income, and hence on investment, will be considered later. Increased optimism may also produce some increase in consumption *directly*, from increased installment buying or the expenditure of cash hoards (but if time preferences lengthen, this works to *restrict* present consumption). The question of how great the rise in income and consumption will be, per unit of new investment, will also be examined later (Chap. IX). It is enough for the present argument to assume, what most students would grant, that *some* initial increase in income results from the new investment even if consumption remains unchanged.

If anticipations now rise substantially farther, analogous absolute and relative changes will again appear. Moreover, as investment expands and as the economy moves into the middle and upper phases of the business cycle, consumption too begins to expand substantially. This is a familiar historical fact, whatever one's theory of the mechanics by which the expansion is achieved. But when the society begins to approach full employment, which for the present short-period purposes we need define only as a point beyond which not all the competing offers for factors can be satisfied at present prices, the pattern alters somewhat. To an increasing extent, the rate of new investment can now be expanded only by trenching somewhat on any further expansion of the output of consumers' goods. Income therefore rises at a less rapid rate than before, relative to investment. If the expansibility of the monetary system also approaches a limit, further increases in anticipations will increase investment but cannot increase income much, if at all. Then consumption may actually fall.

These relations are indicated in Diagram V, which applies to the short period as previously defined. That is, population, tastes and techniques are assumed constant; other "exog-

enous" factors of change are ruled out; and the period is assumed to be too short to allow for any reaction of changes in income upon anticipations. Curve I is the demand-and-supply locus curve for new investment of Diagram III; curve Y is the national money income; and at any level of anticipations, such as A_1, consumption is measured by the horizontal distance between the two curves, as by I_1-R_1 (in the middle and upper ranges of the diagram the size of investment is, of course, much exaggerated relative to consumption and income).

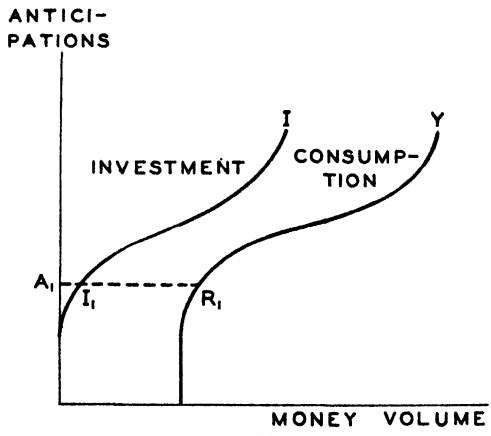

DIAGRAM V.

In the short period, we can thus present investment, consumption and income as being all functions of the general level of anticipations. The "causal sequence" implied to this point hence runs from anticipations to investment to consumption.[1] The diagram, however, presents only the end results when anticipations are held constant at each level, on the assumption (as before) that the reaction effects on anticipations do not appear and that other factors of change are inoperative.[2]

[1] Except that a part of consumption may vary with anticipations, as noted.

[2] The comments at the end of the preceding section, on the time problem, also apply to this diagram and to Diagram VI, below.

It is again probable that these curves are not strictly reversible. So far as the curve for investment itself is not reversible and so far as income and consumption are governed by investment, curves like that of Diagram IV (under similar assumptions) would be more exact. The same considerations presumably apply to that part of consumption which is governed directly by changes in anticipations.

2

A somewhat similar analysis can be applied to the size and distribution of the money stock. This analysis will be undertaken at greater length in Chap. VI, below, in another connection, but to complete our broad outline of short-period relations, a summary account is also necessary at the present point.

At any time, part of the money stock is being currently used in the production and exchange of consumption goods and part in that of new investment goods. These two parts together we shall call "active" money. But part of the total money stock is also being held, at any time, in idle balances, or hoards. This concept of idle balances, or hoards, has caused a certain amount of difficulty. Hoards can be defined, I think, only in terms of time and of money-using habits. I have discussed the problem elsewhere[1] and here shall merely repeat the summary definition there presented. Hoards, or idle balances, are all sums of money received as income or as business receipts which are withheld from expenditure on goods or services longer than what is for the original recipient one "normal" maximum income-expenditure period or business-receipts-expenditure period. Evidently these periods may be of different lengths for different individuals and firms. Hoards include all funds currently tied up in the financial circulation.

[1] In the *Quarterly Journal of Economics* for February, 1937; in the *Journal of Political Economy* for June, 1937; and in my book on *The Behavior of Money* (1936), Chap. V. Also see the article by H. S. Ellis in the *Quarterly Journal of Economics* for May, 1938. The definition of "hoards" as being coterminous with the total money stock is discussed and rejected in Chap. VI, below.

Let the total money stock be M, the absolute size of idle balances H, and their relative size, as a percentage of the total stock, h. Then the size of the stock of "active" money is $(M - H)$, which can also be written as $M(1 - h)$. It appears that h moves, in general, inversely with business activity, whereas in general the size of the stock of "active" money moves closely with national money income. The ratio between income and "active" money is presumably quite stable.[1] The money stock itself can be defined substantially as currency in circulation outside of all banks and the Treasury plus demand deposits owned by non-bankers plus United States deposits in banks.[2]

When the money volume of general business activity increases, a larger quantity of "active" money than before is required to carry the increased volume of investment and consumption operations.[3] If the total money stock is fixed in size, this additional active money can be obtained only from previously idle cash balances or hoards. The terms H and h then both fall. When general activity falls, on the other hand, they both rise. If the money stock is expansible, however, the situation is different. Increasing activity is then still supported to some extent with money drawn from hoards, but is supported chiefly by the creation of new money, as by the banks. Then the term h again falls, as does H, but H declines relatively much less than before. Decreasing activity, on the other hand, causes a rush for liquidity. Hoards are increased as inventories and securities are sold, but bank loans are also repaid, and the banks themselves sell securities. M therefore falls; h rises sharply; and H increases somewhat. The greater the fall in M the less the achievable increase in H. The implications of these self-evident relations, especially with respect to the problems raised by the "investment-multi-

[1] "Active" money is that which is held in response to Keynes's "transactions motive." See my *Behavior of Money*, Chap. V. I have found it convenient to change certain of the symbols used in the latter book (see Chap. IX, Sec. 1, below).

[2] See my *Behavior of Money*, pp. 10 and 176.

[3] Reasons will be given later for believing that the circular or income *velocity* of "active" money is highly stable in short periods (see Chap. IX, Sec. 3).

plier" concept, will be examined later, in Chaps. IX through XI.

Now short-period changes in investment and consumption, and hence in the total money volume of activity, have already been shown to be functions of changes in the general level of anticipations. Without attempting here to say whether or not a dollar spent on consumption goods produces the same amount of income as a dollar spent on investment goods, we can nevertheless reasonably assume that somewhat the same relations prevail between the two parts of the "active"

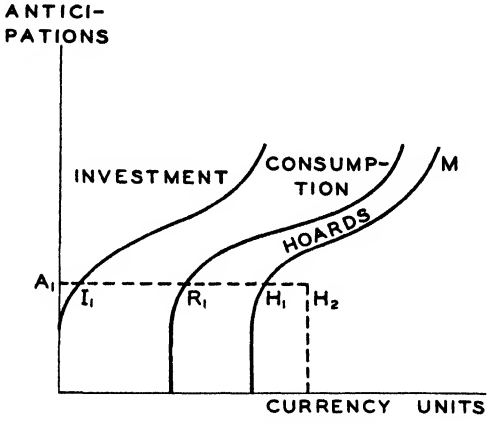

DIAGRAM VI.

money stock as those suggested, in the preceding diagram, with respect to the size and distribution of expenditures. On the assumption that the money stock is not indefinitely expansible, the short-period changes in its size and distribution are then those indicated by Diagram VI. At any level of anticipations, such as A_1, the total money stock M is the sum of the quantities currently tied up in investment operations (A_1-I_1), in consumption operations (I_1-R_1) and in hoards (R_1-H_1). These curves, like those of Diagram V, are presumably not strictly reversible in short periods and are subject to the same qualifications in other respects. Multiplication of M by the current average circular or income velocity of money gives the national money income

(curve *Y* in Diagram V), as will be shown in Chaps. IX and X, below.

It is possible, of course, that the banks will not provide just that quantity of money which the public currently desires. This can happen either because the bankers' anticipations differ from those of the general public or because of technical limitations on expansion (such as a shortage of reserves) operating from within the banking system. Interest rates will then be lower (higher) than otherwise, the volume of hoards higher (lower); and investment will to some extent be stimulated (checked), in this degree absorbing the change in hoards. It will be argued presently, however, that the direct effects of interest-rate changes on the volume of new investment are usually not great in most fields. Moreover, except when technical conditions limit the expansion of the money supply, the bankers are usually more followers than leaders.

Broadly speaking, therefore, short-period changes in both the size of hoards and the size of the money stock, like the short-period changes in investment, consumption and income, are primarily functions of changes in the general level of anticipations. This proposition, though it must obviously require qualification in particular circumstances, provides a simple unifying principle for the interpretation of the complex and diverse phenomena of actual experience.[1]

The next two chapters are concerned with certain further questions, concerning the relations between market interest rates and new investment, which have been important in recent discussions. The reader may prefer to omit them, however, and pass directly to the analysis of business cycles in Chap. VII.

[1] Changes in anticipations, however, do not *always* produce parallel changes in the money stocks or inverse changes in hoards. Thus a rise in anticipations, other things equal, may cause the net balance of international payments on combined commodity, service and security accounts to become unfavorable; and the supply of "active" money may then *fall* [see my article in the volume of essays for Prof Frank W. Taussig, *Explorations in Economics* (1936)].

Chapter V

MARKET INTEREST RATES AND NEW INVESTMENT

I

IN the preceding chapters, we have shown that, in the absence of "exogenous" disturbances, short-period changes in the volume of new private investment and in the size and distribution of the money stock are due in largest part to changes in the current general level of anticipations. In this analysis, we have said little or nothing about market rates of interest, rates of equity yields and the like. Many students, however, have insisted that these rates play an important part in determining the current volume of new private investment. Thus Keynes, in an argument which need not be repeated in detail here, holds in substance that the size of the stock of money and the current schedule of what he calls liquidity preferences (for the holding of assets of different degrees of liquidity or shiftability) interact to determine "the" rate of interest; and that in equilibrium, the volume of current new private investment is the volume for which the marginal yield expected by capital users is just equal to the rate of interest as thus established. Thus a subtle and persuasive connection is developed between the rate of interest and the volume of new private investment.

The business man and the banker, though using less sophisticated jargon, are likely to express a not dissimilar opinion. In their usual view, the (market) rate of interest is the minimum price which must be paid for capital. Therefore, new investment will not be pushed so far that the expected return falls below this rate. Most bankers would probably also admit some relation between interest rates

and the total quantity of currency and deposits, though they might differ on whether the relation is positive or inverse.

Is the analysis made in the preceding pages merely a restatement of Keynes's view, or are the two seriously at variance? I think the latter answer is more nearly correct. I shall try to show that the interest rate must be assigned a role different from and much less important than that which is given to it in the Keynesian construction; that the causes and effects of changes in liquidity preference need expansion and re-interpretation; and that when these things are done, the specifically Keynesian mechanism for the short-period determination of the volume of new private investment is seriously impaired. I begin with the rate of interest.

The first step is to make clear exactly what is meant by "the rate of interest." The treatment of the interest rate in the recent literature, although very suggestive, is often not very satisfactory. A number of writers seem to slide back and forth between "expected" rates and "current market" rates, according to the needs of the moment, and they also frequently ignore the actual wide diversities of behavior of the several groups of market rates. This lack of precision in treatment necessarily leads to somewhat confused results.

If "the rate of interest" means the prevailing marginal rate of (highest) *expected* yield on the aggregate of new investment, as in most discussions of the Keynesian "marginal efficiency" of capital itself, we are led straight back to the argument presented in Chaps. II and III, above. It was there contended that in the short period and in the absence of "exogenous" factors of change, changes in anticipations operate on or within a fairly stable matrix of demand-and-supply schedules (*i.e.*, schedules of marginal expected yields) to determine the volume of new investment. Depending on the level of anticipations, the same partial-equilibrium rate of marginal expected yield may be consistent with a variety of *different* volumes of new investment (Diagram I). But this is not, of course, the way in which

Keynes uses "the interest rate" here. Nor can the interest rate, in this sense of marginal expected yield, be realistically regarded as something which is "determined" by the interaction of liquidity preference schedules and the stock of money. Short-period shifts in schedules of marginal expected yields and changes in the money stock, as already shown, are both primarily functions of changes in anticipations; and it will be argued later that the same thing is also true of liquidity preferences. Liquidity preferences and money stock therefore cannot "determine" marginal expected yields; nor would Keynes argue that they do.

The term may be taken to mean, on the other hand, the prevailing *market* rate of interest, namely, an average of some or all of the yields which can be or are being obtained *now* by the purchase of given physical assets, securities or other titles, valued at current market prices. In this context, the term "market rate of interest" must then be interpreted not in a narrow sense, but to include the current rates of yield which can be obtained by the purchase of equities at current prices; and we shall in fact use the term hereafter in this broader sense, without further specification. This is the kind of interest rate which, in the Keynesian construction, intersects with the schedule of the marginal efficiencies of capital to determine the volume of new investment. That is, in this construction it is assumed that in equilibrium the currently prevailing marginal rates of expected yield—those at which new investment is now being made—*are always just equal* to the currently prevailing market rates of interest on comparable types of assets.[1] But this critical assumption is, I believe, contrary to fact. Instead, I think that in most fields the prevailing market rates of interest need have rather little relation to the marginal yields expected from the new investment which is going on currently, and hence little relation to its volume. If this be true, however, it then follows that the corresponding parts of the Keynesian con-

[1] Keynes, *The General Theory of Employment, Interest and Money* (1936), pp. 136, 137 *et passim.*

struction are untenable.[1] The amplification and defense of these conclusions will constitute the substance of the present chapter.

The actual relation between marginal expected yields, market rates of interest and the volume of new investment can be comprehended most easily if we begin by examining the different things that happen, in the several phases of the business cycle itself, to market and to expected yields on *already existing* assets. So far as concerns expected yields, it is obvious that the analysis and diagrams developed in Chaps. II and III, above, and there applied to new investment, can likewise be applied without substantial qualification to purchases of these already existing assets (excluding, of course, "assets" intended for personal consumption). The analysis is also applicable whether the assets in question are existing plant, land, securities or other titles. We may take the depression phase of the cycle first.

2

In the depression phase of the cycle, when anticipations are very low, the *prevailing* marginal yields[2] expected from

[1] Difficulties also arise over the wide differences in patterns of movement, through the business cycle, of market yields on the different types of assets. Inspection of the data for the United States since 1919 suggests that the long- and short-term interest-rate groups moved in roughly parallel fashion in their "long" movements, say relative to 8- or 10-year periods, but that there were wide and apparently non-systematic differences in their "short" movements, especially within any one year. The long-term rates were sometimes above, sometimes about equal to, sometimes below the short-term levels, with no simple and self-evident key to these differences (also see a footnote later in this section). It is likewise interesting to note that when the *differences* between long-term and short-term rates are examined, the turning points of these difference series sometimes correspond more closely to the turning points of general business cycles (as established by Prof. W. C. Mitchell and his colleagues) than to the turning points of the original component series. I am indebted to P. Bernard Nortman for permission to examine his exhaustive compilations of these rates.

There are no adequate data on market yields from equities, but from what are available it seems clear that these yields in turn moved quite differently from either interest-rate group, though they were closest to low-grade bond yields.

[2] The "prevailing" marginal expected yield at any time is that yield at which the currently prevailing demand-and-supply schedules intersect (Diagram I) and at

the purchase of already existing assets are also low, naturally. But average *market* yields on these assets (current return divided by current market price, with allowance for premium or discount where relevant) are usually substantial[1] and, in most fields, are well above the marginal *expected* yields prevailing at this time. This is true for three reasons. First, people overestimate both in optimism and in pessimism. As depressions set in, both buyers and sellers expect the money returns from existing assets to fall, and the market prices of such assets therefore decline until some satisfactory ratio between marginal *expected* return and actual market prices is reached. Second, the decline in market prices is also intensified so far as the onset of the depression increases the public's need or desire for greater liquidity and thus causes them to sell other assets for cash. This is the principal cause, indeed, of the usual fall in price of high-grade government and other gilt-edged bonds, for which no decline in money return may be expected. Third, actual current returns are usually sluggish in their changes and do not fall so fast or so far as expected returns. The absolute money returns on fixed-interest assets may not fall at all (in which case market yields *rise*), and even for equities the decline in the payment of dividends and other profits commonly lags behind the decline in business activity and actual current earnings. At any time in a depression, market yields on existing assets are therefore usually higher in most fields than prevailing marginal expected yields. That is, both the marginal buyers and the marginal sellers expect that actual yields will be lower in the future than they are now. These states of expectation presumably continue until the recovery begins.

which current transactions are hence being carried on. That is, it is the currently prevailing partial-equilibrium yield.

[1] Market yields on specific existing assets at present prices never fall below zero, no matter what losses individual enterprises may be making—unless in certain exceptional situations of bankruptcy or other pressure, in which a foreseeable future loss is assumed to avoid a worse loss of some other sort. And since at least some interest and dividend payments are always maintained, the average market yield on the *total* of existing assets is always positive.

It should be noted, however, that marginal expected yields will be closer to market yields, on the average, for existing assets which will be contractually convertible into known amounts of cash at nearer dates (as in the case of loans falling due soon) and for which the probabilities of such conversion are higher. In the case of renewals of short-time bank loans on good security, the two kinds of yields are virtually identical.

In the expansion phase of the cycle, the opposite relations prevail. When anticipations begin to improve, the schedules of marginal yields expected from the purchase of existing assets begin to be revised upward; the prevailing marginal expected yields and the market prices of such assets also rise;[1] and since actual current returns on assets are usually sluggish at the start of a recovery and do not rise so rapidly as business earnings, currently obtainable market yields may *decline* for a time. This is particularly true in the case of fixed-return obligations which have hitherto maintained full payment. Such obligations will here show no rise in market yield at all, but rather a fall. Under this double influence, prevailing marginal expected yields (which include expected capital gains, of course) rise toward market yields, soon equal them and then, in most cases, pass above them. As the expansion progresses and as money returns improve further, certain market yields may also rise for a time, though this is improbable except temporarily. But market yields as a whole typically lag behind prevailing marginal expected yields, once the expansion is in full swing, and are below them. This divergence necessarily follows from the very fact that the *market prices* of existing assets typically rise in recovery and expansion periods, and rise roughly with business activity, whereas the absolute money returns on these assets are either fixed or, as in the case of most dividend payments, rise after, rather than with or before, business activity and earnings. If the prevailing marginal expected yields on existing assets were always equal to market yields,

[1] In particular, bankers and other lenders and security buyers raise the capitalizations attached to assets and to prospective income streams.

the market prices of such assets would never change (nor would the volume of new investment), except in consequence of a change in the absolute money returns on the assets.

Finally, as the peak of the expansion approaches and as anticipations level off before starting to decline, the prevailing rates of marginal expected yield cease to rise and soon are revised sharply downward. As the market prices of assets consequently fall, market yields usually *rise* for a time, because the absolute money returns on the assets either remain unchanged or fall later and less sharply than their market prices. Then prevailing marginal expected yields pass below market yields, and stay below until the next recovery starts.[1]

Thus at no point, either in expansion or in depression, are the prevailing marginal expected yields on existing assets equal to their current market yields, except fortuitously, and in no sense can market yields be regarded as "determining" or even limiting the levels and fluctuations of prevailing marginal expected yields. To put the same thing in another way, the current market yield is what *has been* received, in the very recent past and up to the present moment. But in an uncertain world there is no assurance that the same ratio between the present return on an existing asset and its

[1] The behavior of some important groups of interest rates in the United States from 1919 to 1939 broadly confirms this rough sketch of the cyclical behavior of market yields and their differences. Long-term bond yields (high-grade industrials, railroads, utilities and municipals) were rising in 1919–1921; high in absolute terms through the depression of 1921–1922, though falling; falling gradually to early 1928; up a little through 1929; down a little to mid-1931; then rising sharply to early 1933 (through the worst of the depression); and then, after another decline, low and steady to mid-1939. Short-term rates (commercial paper and 90-day bank loans) likewise rose in 1919–1920 and were high, though declining, in 1921–1922; but fell only to late 1924, then rose to mid-1929, fell to mid-1931, rose considerably in the latter half of 1931, then fell again and thereafter held low and steady through mid-1939. They thus differed significantly from the long-term movements. There are no adequate data on market yields from equities, but in short periods, these yields are affected more by changes in market prices than in earnings, and it seems clear that they moved, in general, inversely with and later than total business activity.

I am again indebted to P. Bernard Nortman for permission to consult his data on these categories and for criticisms of the foregoing generalizations.

present price *will* continue even through tomorrow—especially when allowance is made for possible capital gains or losses. Hence in buying an existing asset the determining factor is, of course, the most probable *expected* yield. Market yields and their recent movements are merely one of a number of guides to what may be expected in the future.

It may also be pointed out that making this sharp differentiation between the prevailing rates of marginal *expected* yield and the current *market* yields provides a simple explanation for the otherwise paradoxical behavior of the actual market yields of the several different types of securities and other assets themselves, through the course of the cycle.[1]

3

We now turn to the problem of *new* investment and its relation to market yields or market interest rates. A large part of the problem, however, is already solved. An individual or a firm with funds which it is desired to spend so as to obtain a future income or a capital gain can usually choose between the purchase of already existing assets and the making of a new investment as already defined—roughly, the purchase of new producers' goods or services. In each case, it is the *expected* yield which concerns the potential purchaser. So far as he has freedom of choice and action, he will push his purchases in any one field until his marginal expected yield from the making of new investment equals that obtainable from the purchase of comparable existing assets in the same field, after allowance for the risk or probability factor previously discussed. He will also have a scale of

[1] But even when buttressed by this differentiation, much current theoretical discussion of the relations between long-term and short-term interest rates can have unequivocal significance only in a world of complete certainty and perfect competition. The fact that long-term industrial bonds have sold, frequently and for substantial periods, at yields lower than prime bank loans can be explained only by unadjusted differences in marginal anticipations and by incomplete mobility between markets. The theoretical discussions also often overlook the difference between anticipations as to the payment of contractual interest and principal, and those as to the market price of the security at future dates *before* maturity. Both factors affect *present* prices.

indifference between different possible fields and different forms of commitment (the steel industry vs. chemicals, securities vs. physical assets, bonds vs. stocks, and so on). The latter scale is determined, given freedom of choice and action, by the factors listed earlier (Chap. II) for the weighting of individual yields.

These considerations suggest that the prevailing marginal *expected* yield on *new* investment always equals that from the purchase of existing assets of comparable types. But this need not be the case. It is true that if the prevailing marginal yield expected from new investment falls below that expected from comparable existing assets, then so far as there is freedom of action, new investment will not be made. But this freedom is often limited, as in the case of a manufacturing enterprise which must eventually repair its plant almost regardless of the state of its managers' anticipations, unless it is to become an investment trust or go out of business. At the other extreme, the prevailing marginal expected yield from new investment in given directions may also rise *above* that from comparable purchases of existing assets, because not all potential investors have access to or knowledge of the given investment field—as when an enterprise has some sort of monopoly. This latter situation, in essence, merely reflects imperfections of competition,[1] but it is nevertheless common and important. Indeed, because of these and other familiar imperfections, the marginal adjustment is never very precise. Again, the time period held in view may differ. The ordinary small individual purchaser of equities probably does not make really careful estimates more than a year or two ahead at most, but the large investor, or the corporation plowing back earnings, may think in terms of decades. The marginal yields which they respec-

[1] That is, these imperfections do not materially affect the present analysis, which is primarily concerned with the causes and effects of changes in anticipations. If the imperfections are serious and widespread, it becomes impossible to speak of equality at the margins, but it will still be true that a change in general anticipations will affect both types of investment, and in the same direction.

tively look forward to are then yields over quite different periods of time and hence are not strictly comparable. In the second case, indeed, purely cyclical factors may play little or no part in the calculation, and the investment involved should be excluded from a rigorous analysis of *self-generating* cyclical processes, though it affects income and market prices as truly as any other type of investment.[1]

About all that can be said of a general character is that, in a rather loose way, prevailing *marginal* expected yields on new investment tend roughly to equal those marginal yields expected on comparable existing assets relative to comparable time periods, so long as new investment takes place at all in the given field—and granted both reasonably competitive conditions and freedom of choice and action. It is probable, however, that the prevailing marginal expected yields on existing assets begin to rise before those on new investment at the beginning of a recovery phase of the business cycle, and fall later at the beginning of a recession. The fact that the asset *is* in existence and has already shown power to earn usually creates some predisposition in its favor.

Finally, it is evident that since market yields or interest rates are never equal to prevailing marginal expected yields on purchases of existing assets, except fortuitously, still

[1] That is, this type of new investment is to be classed with such "exogenous" factors, not themselves primarily products of the self-generating cyclical processes, as changes in population growth, technical advances or wars. Two or more business cycles may occur in the course of one "long wave" of "extra-cyclical" new investment of this sort, or in the course of a "long wave" of technical advances or population growth. The "exogenous" factors provide the framework within which the self-generating cyclical processes work and may determine their amplitude, duration and intra-cycle trend, but they are not themselves an intrinsic part of these processes. The questions involved here will be explored further at a later point (Chap. VIII).

This is all simply one way of saying that the sum total of the "reality" under examination in this book—namely, fluctuations in general economic activity other than those which are seasonal, secular or random in character—is not given by the self-generating cyclical processes alone. What we are doing here is to divide the total of reality into two sections: the self-generating cyclical processes and the exogenous factors. The sum of the two sections in each period of time is reality itself.

less are they equal to prevailing marginal expected yields on new investment. The two kinds of expected yields have a loose relation to each other, but not to market yields. The potential purchaser's actions are determined by a comparison of *expected* yields, on new investment and on existing assets, but not by a comparison of either of these with current *market* yields on existing assets. It also follows, therefore, that market rates of interest cannot directly determine the volume of new investment in the manner prescribed by the Keynesian construction. It is the marginal *expected* yields, in the minds of demanders and suppliers of funds respectively, which govern new investment in the short period, and in the ways already examined.[1]

It can be contended, in defense of the Keynesian view, that Keynes himself does not suppose that prevailing marginal expected yields and current market rates of interest are ever precisely equal, except in some sort of (short-period) quasi-equilibrium situation. I agree that in this latter situation the two are equal; the situation develops when the general level of anticipations is constant. But again I contend (also see Chap. VI, Sec. 3) that (1) it is the fact that anticipations *are* constant, and that the demand-and-supply curves for new investment are therefore what they are, which determines the current volume of new investment—with the exceptions noted in the next section, it is not the current market rate of interest which determines this volume; and (2) a constant general level of anticipations is itself only a temporary or transitional phenomenon. It will be shown in Chaps. VII and VIII, below, that in individualistic-capitalistic societies anticipations are always, by their very nature, in a state of more or less rapid change.

Whether prevailing marginal expected yields and current market rates of interest are actually equal, therefore, is usually unimportant; in most fields it is the former, not the latter, which govern new investment.

[1] But in certain boom situations, as will be shown later, a sharp rise in market rates may affect anticipations adversely and hence investment.

4

It can be argued that market rates nevertheless do have an indirect effect on new investment because they enter into costs, at least for that part of investment which is financed by loans. This entirely valid contention must be weighed, however, in the light of three other sets of considerations. First, rather little is true of market rates of interest, in this connection, which is not equally true of other types of costs. By holding all other categories of costs constant, as Keynes virtually does when he discusses interest costs in the short period, *any* type of cost can be made to appear to be the critical factor on the supply side. Potential investors naturally expect that as the volume of new investment rises cyclically to substantial proportions, various costs will also rise. This is one reason why the demand curves of Diagram I are drawn to become sharply inelastic toward the right. Even a change in market rates which is greater than the change that was previously expected merely increases or decreases the elasticity of the *now prevailing* demand schedules for *further* new investment. Analogously, a rise in market rates for short-term loans may also induce other types of suppliers of investment funds to increase the inelasticity of their own schedules for further investment—though this need not happen, as witness 1929 in the United States.

Second, and much more important, it may be doubted if the influence on investment decisions of *changes* in market interest rates on loans, within the ordinary ranges, is very important outside of the fields of housing and the public utilities. The whole field of equity investment and of investment through the plowing back of business earnings is influenced by changes in market interest rates only at one or more removes, if at all. Likewise in straight wholesaling and jobbing, of which Hawtrey has made so much, the importance of borrowing is now usually far less than it was supposed to be in "classical" times. Thus it is familiar that the dependence of business enterprises on bank borrowing

and even, in most fields, on bond flotations has been undergoing a protracted decline in the United States.[1] Moreover, even where interest rates are a substantial element in costs, it is doubtful if changes in them usually have a decisive effect on the current scale of operations or on the volume of new investment (again excepting housing and the public utilities). The ranges of possible variation in the other factors that enter into the calculation of expected yields and in the estimates of the probability that given expected yields will materialize are so wide, in most fields, that changes in interest costs are usually too small relative to these other sources of variation to have much influence. Even on the cost side alone, the variations in interest costs for any period up to several years are commonly much smaller than the variations which ordinarily take place in the aggregate of other investment costs through the course of the cycle. It can also be argued that, in most fields, changes in costs as a whole play a much smaller part in investment decisions (because they are smaller in relative terms) than changes in expected demand—due, for example, to expected changes in general business activity.[2]

[1] Kalecki's "Principle of Increasing Risk" (*Essays in the Theory of Economic Fluctuations*, pp. 95 *ff.*), however, seems to presuppose substantial interest costs.

[2] See the most interesting results of the questionnaire study recently conducted at Oxford among a group of 37 business men: *Oxford Economic Papers*, Vol. I, October, 1938, pp. 1–31. The sample used was too small to be significant, but the near unanimity of the opinions expressed, as to the relative unimportance of the interest rate in affecting investment decisions, is nevertheless impressive. Even the public-utility and housing fields were not made marked exceptions, though this result may chiefly reflect merely the composition of the group questioned. Also see the study, suggesting similar conclusions even more emphatically, by J. F. Ebersole, *Harvard Business Review*, Autumn, 1938, pp. 35–39.

For an analysis based on quite different theoretical grounds, but coming out with a conclusion as to the practical effect of the interest rate on new investment which is not wholly unlike that reached in the foregoing text, see Hicks's *Value and Capital*, especially pp. 224 *et ante*. Hicks's discussion of the relation between long and short rates (pp. 147, 260 *et ante*) is also excellent. But in his analysis of the determination of market rates as a whole (*e.g.*, pp. 163–168), he seems to me to miss the vital difference between actual market rates and prevailing marginal expected yields, developed above.

Finally, one thing *is* true, of course. Even in the absence of central-bank intervention, the development of a high boom commonly forces short-term market interest rates up rather sharply. In terms of Diagram I, this means that the supply curves for new short-term investment funds become very inelastic. Such a rise in interest rates undoubtedly has a special psychological significance. This is due partly to the fact that everyone knows about it at once, partly to the tradition carried over from eras when interest rates were more important as costs than they are now, and partly to the fact that the rise frequently presages central-bank intervention. But in the absence of intervention, the rise in rates is simply a result, a symptom, of the preceding expansion. Except to the extent that the same things hold true for a comparable rise in any other type of costs, it does not *itself* change the current level of anticipations or otherwise shift the demand or supply curves for new investment funds. The change in market interest rates has no peculiar relation to the volume of new investment, and does not affect it in any manner not accounted for in the preceding discussion.

Chapter VI

MARKET INTEREST RATES, THE MONEY STOCK AND ANTICIPATIONS

I

ON this view, then, and in contrast to the Keynesian position, the market rate of interest has no special and peculiar role in determining the volume of new investment in the short period. Because of the great practical importance of changes in market rates of interest and current rates of equity yields, however, it is worth while to examine briefly the factors which govern market rates themselves in the short period, and also the nature of the connections between market rates of interest and the size and distribution of the money stock.

On the second question, we shall reach conclusions substantially different from those presented by Keynes, but our answer to the first question does run in broadly Keynesian terms. As was shown in the preceding chapter, changes in the average of market rates of interest (taken to mean the average of market yields on *all* assets currently offered for sale) are due to shifts in the current scales of liquidity preference: that is, in the scale of preferences for holding assets of different degrees of liquidity or shiftability. These shifts in liquidity preferences, in turn, are due to changes in the general level of anticipations. So much is familiar, in broad terms. It is now necessary, however, to examine these propositions in somewhat more detail, with special reference to the connections between liquidity-preference scales and the money stock, and hence between market interest rates and the money stock.

Keynes uses the concept of liquidity preference, in the main, only to compare the relative desirability of holding money (the total stock) and of holding all other assets, without much differentiation between them. Actually, however, every type of existing or prospective asset, including money, can be assigned a fairly definite and separate place in a scale of preferences arranged according to estimated liquidity. Money is merely the most liquid asset, not the only one which possesses some degree of liquidity or "shiftability."[1] After money come, roughly in order of decreasing liquidity, such categories as time deposits,[2] short government and prime commercial documents, gilt-edged bonds, "blue-chip" equity shares, other bonds, other shares, mortgages and finally such physical assets as land, buildings and machinery. The various kinds of inventories appear at several different places in the scale. The scales are not the same for all individuals and firms, but the general order is presumably fairly uniform.

In any short period, the total supply of already existing assets can change but little. A *general* rise in liquidity preferences therefore produces a fall in the *average* price at which assets as a whole are currently exchanged against money. As already remarked, however, the prices of particular types of assets may either fall, rise or stay unchanged. Thus the desire of some people to get out of short-term interest-bearing securities and into cash may be more than balanced by the desire of others to get into such securities and out of other

[1] Compare Hicks, *Value and Capital*, pp. 167, 170. But in certain extreme situations, the stability of the *value* of money even over short periods may come to be questioned, though it remains the most *liquid* asset, and people then try to shift out of money into commodities. So it was in Germany in 1920–1923; and so in this country in 1932–1933, when many people hoarded canned foodstuffs.

The definition of the liquidity of an asset as the possession of "self-liquidating" power seems to me of uncertain meaning, except in terms both of a theory of business fluctuations and also of foreknowledge of what those fluctuations will be, so far as they will affect the particular asset. This definition also seems to rule out money as an asset entirely.

[2] "Money" being defined as currency and demand deposits in the hands of non-bankers.

less liquid assets (*e.g.*, inventories), and the prices of these short-term securities may therefore *rise*.

Now these general changes in preferences for holding certain types of assets rather than others arise from general changes either in optimism about the economic future[1] or in time preferences, or in both. That is, they arise from changes in one or both components of the general level of anticipations, as previously defined. In this broad sense of the term "liquidity preference," then, we do not need to talk about changes in liquidity preferences at all but can deal directly with the primary phenomenon, changes in anticipations. One manifestation of a change in anticipations *is* a change in liquidity preferences, and hence in the market prices of assets.

Moreover, a change in the market prices of assets in terms of money entails an opposite change in their market yields, unless their absolute money returns have also changed. It follows, therefore, that in the absence of governmental or central-bank intervention, a change in the average of all current market yields merely reflects a corresponding shift (at the margin) in the average schedules of liquidity preference for money. That is, it is one effect of a change in anticipations. In the short period, for each level of anticipations there is a particular average scale or schedule of liquidity preferences, which shifts in favor of the less liquid types of assets as anticipations rise. As anticipations rise, the average market (money) price of the total of assets also rises relative to current returns, and their average market yield hence falls. The *amount* of the change in the market yields, however, is also influenced by the expansibility of the money supply. The greater the expansibility the greater the fall in market yields, other things equal.[2] It must be remembered,

[1] That is, from a general change in *subjective* attitudes toward the future development of a present economic situation which has as yet changed but little *objectively* (Chap. II, Sec. 1).

[2] For example, an increase in total bank security holdings entails a fall in market interest rates, other things equal.

too, that a fall in the aggregate average yield may be consistent with a rise in certain specific types of yield.

Broadly, then, and in the absence of intervention, changes in market rates of interest or other market yields are simply resultants of the interaction at the margin of changes in liquidity-preference scales—of changes in anticipations—with the current expansibility of the money supply. In general, borrowers borrow because they feel they can use the money profitably. They come to feel so in consequence of changes in their anticipations, and in most fields, for reasons already given, are usually not very much influenced by changes in the rates of interest currently charged. The willingness of bankers and others to lend is also governed chiefly by the state of their own anticipations, except so far as restrictions are imposed on the bankers by internal technical limitations on the expansion of the monetary system[1] and by the operating costs of making loans.

In the absence of intervention, to repeat, changes in market interest rates are therefore chiefly a resultant of changes in anticipations. It will be shown presently that, as a consequence, changes in market interest rates are also chiefly a resultant, not a cause, of changes in business activity. They are symptoms, not prime movers.[2] In the main, prospective buyers of assets, whether old assets or new investments, do not act because market rates of interest are high

[1] That is, by the impending exhaustion of any existing reserves in excess of prevailing legal or customary minima and by inability to secure more reserves by rediscounting or otherwise selling assets already held on acceptable terms.

[2] It is sometimes argued (as in the *Oxford Economic Papers*, Vol. I, October, 1938, p. 8) that lower interest rates raise security values, thus improve the liquidity of firms and thus stimulate business activity. But this, even if correct (as it is in certain situations but not in others), does not show why interest rates fall. In the absence of intervention, the *causa causans* is a rise in anticipations.

The extraordinary levels and structure of interest rates in the United States in recent years, especially for government issues, are largely the result of an extreme shift of liquidity preferences toward cash and highly "liquid" assets, operating in a situation of ever increasing money supply. The reasons why market yields on less liquid assets have not usually been raised much by this shift are examined briefly in Chap. XIII, Sec. 6, below.

or low. Rather, market rates are high or low because buyers and sellers have *already* acted.

2

In the preceding section, we have explained changes in market rates of interest primarily in terms of shifts in marginal liquidity preferences, and hence in terms of prior changes in the general level of anticipations—and to some extent in terms of the technical limitations on the expansibility of the money supply.

With this explanation, as far as it goes, Keynes would agree. He himself attempts to go a step farther, however, and in one of his most striking and novel analyses tries to bring changes in the quantity of money into the picture. Put broadly, he argues that with given schedules of liquidity preferences, changes in the quantity of money will produce opposite changes in market rates of interest and hence will affect investment and income.

This proposition, when thus baldly stated, seems to me erroneous for a number of reasons. First, I agree that when there is no governmental or central-bank intervention, increases in the money stock (for example) at times occur concomitantly with decreases in market interest rates, and conversely. But there is no direct "causal" connection between the two changes. One is not the effect of the other. Nor can either take place, in the absence of intervention, with unaltered general schedules of liquidity preferences. Rather, in the absence of intervention, both changes are the effects of a common antecedent cause, prior *shifts* in general anticipations and hence in liquidity preferences. Second, if the money stock is artificially increased while anticipations and hence general liquidity preferences remain unchanged, as by central-bank open-market purchases, it is true that market rates will be forced down. But if nothing else happens, the only other important short-period result will be to increase hoarded, or idle, balances of money by the amount of the purchases. Specifically, there will be little or

no increase in investment or in income, for as previously shown, *market* interest rates have little determining effect on new investment in most fields. Finally, when Keynes talks about liquidity preferences in connection with money, it is not always clear whether he has in mind the whole money stock or only a part of it. The point in issue has more than merely formal importance. It will be argued in a moment that the concept of liquidity preference for money should be applied only to money hoards as previously defined; and it will be argued in later chapters that changes in the size of hoards play a vital part—or, more accurately, reveal the working of a vital mechanism—in the self-generating business-cycle process.

These conclusions with respect to Keynes's analysis follow fairly directly, in the main, from the argument of the preceding chapters and the first section of the present chapter, but a certain amount of amplification is required. We may begin with a summary outline of Keynes's own position.

At the outset of his discussion of liquidity preferences with respect to money, Keynes seems to have in mind the *whole* money stock. He says, "as a rule, we can suppose that the schedule of liquidity-preference relating the quantity of money to the rate of interest is given by a smooth curve which shows the rate of interest falling as the quantity of money is increased."[1] Moreover, "the three divisions of liquidity-preference" are defined as depending on the transactions motive, the precautionary motive and the speculative motive.[2] These three types of use together exhaust the total money stock. But when Keynes later comes to consider more explicitly the relation between money stock and interest rates, he seems to have in mind only that part of the money stock which is held in response to the speculative motive. In these passages[3] he concludes that the amount of money required to satisfy the transactions motive and the precau-

[1] *The General Theory of Employment, Interest and Money*, p. 171.
[2] *Ibid.*, p. 170.
[3] *Ibid.*, pp. 196, 197; *cf.* p. 171.

tionary motive is mainly a resultant of general economic activity and the level of the national money income. Here it is only the demand for money to satisfy the speculative motive which "usually shows a continuous response to gradual changes in the rate of interest" and for which a "continuous curve" can be drawn. Finally, and still later, he speaks of *two* liquidity functions, one embracing the first two motives for holding money and the other the third,[1] which together again exhaust the total of motives for holding money. This seems to entail a reversion to the first position just outlined.

It is thus not entirely clear what part of the money stock Keynes has in mind when he talks about liquidity preferences with respect to money. The point would perhaps be of minor significance if it were not for his further conclusion that changes in the decisions of the general public with respect to hoarding cannot change the quantity of money.[2]

We shall revert to the latter contention presently. For the moment, however, and without examining further the possible interpretations of Keynes's proposition, let us proceed directly to the principal question stated at the beginning of the present section. This is the question of the relation between changes in the money stock, whether by "stock" we mean all of it or only part of it, and market rates of interest. We may again divide the total stock into two parts, "active" money and idle balances, or hoards, and shall then show that in the absence of intervention, changes in market rates are not directly "caused" by changes in the stock of either active money or hoards.

3

Money hoards, or idle balances, are those sums of money which are held over time in preference to any other type of asset. They can be defined in the way previously indicated.[3]

[1] *Ibid.*, p. 199.
[2] *Ibid.*, p. 174.
[3] Chap. IV, Sec. 2, above.

They consist of all sums received as income or as business receipts which are withheld from expenditure on goods or services longer than what is for the original recipient one "normal" maximum income-expenditure period or business-receipts-expenditure period.

The larger part of the money stock in existence at any time is usually not being "hoarded" in this sense. When a business man accepts money in payment for goods or services that he has sold, for example, in the great majority of cases he does not accept it because he has a "liquidity preference" for holding money as against all other assets. He accepts it because in money-using societies, money is the most convenient type of asset to employ in conducting exchanges—that is, because he ordinarily proposes to buy some other asset with it. In such operations the relative merits of money, regarded as an asset which he can *hold*, are of little interest to the business man. His liquidity preference with respect to these additional sums of money is in favor of business assets other than money. His liquidity-preference views manifest themselves not when he consents to receive money from his sales, but when he decides what to do with the money. If his anticipations are rising or high, he will promptly spend all or most of it on non-money assets, selected according to his own current views on profit prospects and the like. If his anticipations are falling or low, he will try to hoard it. In the first case, his preference for *holding* additional money is clearly at or close to zero.[1]

The "active" part of the money stock which is being used currently in this way in the production and exchange of

[1] Thus suppose that any unit of money will somehow vanish if not spent within six weeks of its receipt, and suppose that no one desires to hoard. If the business man's payment habits are such that he normally spends each block of money within *five* weeks of its receipt, money will still be perfectly satisfactory to him as a medium of exchange, though almost worthless as a store of value. The liquidity preference for holding this strange money would be practically nil.

Similar considerations apply, I think, to the "asset theory" of money, which Dr. Marschak has recently re-examined in very illuminating fashion (see the references above). The asset approach is strictly applicable only to hoards as above defined.

goods and services, and which at any moment is held in response to Keynes's "transactions-motive," is clearly not being hoarded. Equally clearly, liquidity preferences with respect to this part of the money stock are zero (or they can even be defined so as to be negative), in the sense that other assets are preferred to money. Nor have market rates of interest any direct "causal" relation to the size of this "active" part of the money stock. If the two chance to change together in the short period and in the absence of governmental or central-bank intervention, it will be in consequence only of the common effects of an antecedent change in anticipations. A rise in anticipations, as shown in the first section of this chapter, will usually be followed by a rise in the market prices of assets as a whole and hence a fall in their market yields. The rise in anticipations is also likely, if it takes place after a period of depression, to be followed by an increase in the total money which is in "active" use. There is obviously no direct and simple "causal" connection, however, between the increase in "active money" and the fall in market rates. Neither is the cause of the other. Rather, both are common effects of a common antecedent cause, the rise in general anticipations.

The remainder of the money stock, which is *not* being used currently in the production and exchange of goods and services, constitutes money hoards. These hoards, which also include all money currently tied up in the exchange of previously existing titles and claims, are held in response to Keynes's precautionary and speculative motives. Keynes is at pains to separate these two motives, and on balance directs most of his discussion of liquidity preferences to the second one. For the purposes of a broad survey, however, it is unnecessary to distinguish sharply between them. In general, conditions which induce an increase in precautionary balances will also induce an increase in speculative balances, and conversely.

The size of the money hoards themselves is at bottom governed in the short period, of course, by the current general

level of anticipations and by the expansibility of the money supply—which last is itself, apart from internal technical limitations, a function of anticipations too. For the society as a whole, with a given average propensity *not* to consume, the owners of money which it is not proposed to spend on consumption in a given short period confront a choice between hoarding, on the one hand, and buying already existing assets or making new investments, on the other. The choice will be determined by the position of the owners' current liquidity-preference schedules, in conjunction with the prevailing marginal expected yields on existing assets and on new investment. These expected yields are the attraction which competes with hoarding for sums which it is proposed *not* to spend on consumption. With a fixed money supply, hoards increase as anticipations fall—that is, as expected yields decline and as liquidity-preference scales shift toward more liquid types of assets. With an elastic money supply, the money stock itself shrinks as anticipations fall, and hoards may hence change rather little (Diagram VI).[1]

As with "active" money, and in the absence of governmental or central-bank intervention, market rates of interest hence have no direct "causal" relation to the size of money hoards. Both market rates and the size of hoards are common resultants of the current general schedules of liquidity preference, and hence of anticipations. Keynes is therefore in error when he declares that market rates and the money stock move inversely if the general schedule of liquidity preference is given, even in the absence of intervention. His conclusion is incorrect, whether he is talking about the total money stock or about speculative balances alone. If the general level of anticipations falls, of course, both specu-

[1] The money stock shrinks here either because bank loans are repaid or because banks sell assets, or both. In terms of cyclical changes in income, examined later, the "propensity to hoard" varies inversely with anticipations, and hence, roughly, inversely with and ahead of income. The differences between marginal and average propensities to hoard will also be examined later.

lative and precautionary balances will increase.[1] In this situation, however, the prices of non-money assets as a whole will decline as people shift from less liquid assets into more liquid non-money assets and into money itself, and market rates of interest will therefore rise too (other things equal). But Keynes's hypothesis apparently requires that they should *fall* when such balances increase. On the other hand, a substantial fall in anticipations usually does cause a decline in the size of the *total* money stock. Since market interest rates usually rise in this situation, the inverse movement of these two factors seems to be consistent with the Keynesian hypothesis. But it is not consistent with the explanation Keynes gives. Market rates do not rise here *because* the money stock shrinks. Moreover, whereas Keynes supposes that the inverse relation necessarily appears only when liquidity-preference schedules remain constant, in this case it appears only because the schedules *change*. To repeat, then, in the absence of intervention, market rates have no direct "causal" relation either to the size of money hoards or to the size of the total money stock. The apparent statistical connection between total money stock and interest rates, previously commented on,[2] is complex and variable, not simple.

If governmental or central-bank intervention takes place, however, then up to a certain point the situation may become substantially that which Keynes envisages. This possibility was referred to in the preceding section. Thus suppose that anticipations are low and constant, as in a period of depression, and liquidity preferences for money hence high and constant; and suppose that the central bank increases the money supply by making large security or bill purchases in the open market. Then no increase in current spending on goods or services is *directly* caused by these purchases. Other things equal, some or all of the recipients of the new money

[1] If the money stock is variable, they may not increase in *absolute* terms. They will, however, increase in relation to the size of the total money stock.

[2] Chap. V, Sec. 5.

will in turn spend it on securities and the like, thus forcing down market rates of interest. Since anticipations are constant, however, all or nearly all of the new money will presently come to rest in hoards, without materially affecting investment or income; as previously shown, changes in market rates as such have little determining effect on new investment in most fields. The history of the United States since 1932, as will be seen later, seems to provide ample illustrations of this tendency of forced increases in the money supply, if unaccompanied by changes in general private anticipations or by new government spending, to drift into hoards. It is true, of course, that the business and investing community may take the central bank's action as "good news." In that case, activity will revive, and market rates may *rise* again for a time. But the revival will be due to the change in general anticipations, not to any important direct effect on investment of the increase in money stock itself or of the decrease in market rates.

Finally, we may again express disagreement with Keynes's conclusion that the decisions of the general public with respect to the hoarding of money cannot alter the quantity of money itself.[1] This proposition appears to be untrue whether we have in mind speculative balances alone or all hoards or the total money stock (unless, with respect to the latter, this total stock is technically invariable). On the contrary, the decisions of the public can and do affect all these magnitudes.[2] Moreover, it will be shown later (Chaps. VIII and IX) that changes in the hoards held by the public play an extremely important part in the processes of the self-gener-

[1] Keynes, *op. cit.*, p. 174. For reasons implicit in the argument above, it also seems to me pointless to follow Keynes when he defines hoards (usually) as coterminous with the *total* money stock. He perhaps shied away from the narrower definition we have adopted here from lack of a conceptual tool for distinguishing at all sharply between hoards and "active" money. This tool will be elaborated later (Chap. IX). It is interesting to recall that in his *Treatise on Money* (1930) Keynes, in discussing Hobson, placed great stress on those savings which do *not* lead to investment—that is, on hoards as we have defined them here.

[2] Also see Chap. IV, Sec. 2.

ating business cycle. For this reason too, the traditional differentiation between the roles of money as a medium of exchange and as a store of value, which Keynes rather tries to blur over, retains large practical significance.[1]

4

The principal conclusions reached in this and the preceding chapter may be summarized as follows, for the short period and in the absence of "exogenous" factors of change. (1) Changes in market rates of interest (interpreted to include current rates of equity yields) are due to shifts in schedules of liquidity preference. So also are changes in the relative size of money hoards, though the degree of change in the *absolute* size of hoards is also governed in part by contemporary changes in the size of the *total* money stock. (2) Shifts in schedules of liquidity preference are due to changes in the general level of anticipations. As shown in earlier chapters, changes in anticipations are also the principal source of short-period changes in private investment, income and consumption, and likewise in the total money stock so far as technical conditions permit this stock to vary. (3) The decisions of the general public hence influence the size of money hoards, and of the money stock itself so far as it is technically variable. (4) Changes in market rates of interest do not of themselves lead to changes in private investment in most fields or in income, despite Keynes's opposite conclusion. (5) If there is no governmental or central-bank intervention, market rates of interest do not move inversely either with the total money stock or with any component of money hoards when the general schedules of liquidity preferences are given and constant, again despite Keynes's opposite conclusion. (6) An inverse relation may appear between market rates and total money stock if there is intervention, but here the change in market rates does not of itself pro-

[1] On the questions discussed in the present chapter, also see the article by H. S. Ellis in the *Review of Economic Statistics*, August, 1938; and Hicks, *op. cit.*, pp. 150, 167, 170.

duce the effects on income and investment which Keynes postulates.

It follows from these conclusions that Keynes's analysis, despite its great contributions in blazing new paths, must be judged seriously faulty with respect to its explanation of the determinants of new private investment and of the interrelations between market rates of interest, the money supply and liquidity preferences.

Chapter VII

THE DYNAMICS OF THE BUSINESS CYCLE: A GENERAL OUTLINE

I

THE crux of the positive argument in the preceding chapters of this study is the proposition that the short-period flow of changes runs from anticipations to investment (and to a part of consumption) and thence to income. That is, in the short period, changes in anticipations determine changes in income. It is then a further logical inference that if general anticipations could somehow be stabilized indefinitely at a given level, gross investment, consumption and money income would all likewise settle ("exogenous" factors apart) at what would be stable equilibrium values for that level of anticipations. But in the real world, nothing of this sort ever takes place. Investment, consumption and income all fluctuate ceaselessly, forming by their fluctuations the so-called business cycle.[1] The conclusion is hence in-

[1] The most convenient description of the external characteristics of those fluctuations in general activity which are commonly called "business cycles" is that already cited and given by Prof. Wesley C. Mitchell in his *Business Cycles: The Problem and Its Setting* (1927), especially p. 468. It is unnecessary to attempt a more precise a-priori definition for present purposes, beyond saying that what we here regard as "business cycles" are those *self-generating* cyclical fluctuations in general activity which have the external characteristics that Professor Mitchell describes. The changes in general activity which are caused by changes in the "exogenous" factors are hence not, in themselves, a part of business cycles. On this differentiation see footnotes in Chaps. II, Sec. 1, and V, Sec. 3, and the longer discussion at the end of Chap. VIII, below.

The process of establishing a short-period equilibrium in investment and hence (other things equal) in income, at a *given* level of anticipations (Diagram I), clearly cannot give rise to a self-generating cyclical movement in general economic activity—unless as a special and improbable case of the recently argued "cob-web theorem."

evitable logically and is plausible on common-sense grounds, that anticipations must likewise fluctuate ceaselessly and in somewhat similar paths. What precisely is it that governs the changes in anticipations?

The general level of anticipations as it stands at any moment is subject to changes coming from either one of two principal directions. One is the conclusions people draw about the future prospects of general economic activity on the basis of what has already happened to economic activity itself in the past, and especially in the very recent past. Everyone is continually extrapolating the past as he has seen it, whether consciously or unconsciously; and in a world which itself varies ceaselessly, the extrapolations must likewise vary from time to time. The second is the conclusions people draw about the prospects of economic activity on the basis of what has happened, or is thought to be about to happen, in what are initially non-economic spheres. These latter events and developments are the "exogenous" factors referred to earlier in this book, which are not primarily economic in their immediate origin and which stand in no close short-period relation to prior changes in economic activity. Such factors are wars, political disturbances, crop yields, technological changes and a host of other familiar phenomena.

Taken as a whole, these exogenous factors can and do influence the general level of anticipations more or less continuously, sometimes in spectacular fashion, and through this and other channels often produce profound effects upon general economic activity. Observing these facts, students have from time to time selected one group of exogenous factors or another and have attempted to explain business cycles as being, in essence, a series of adjustments of economic activity to prior changes in the selected exogenous factors. That view, however, as was stated in Chap. I, we shall not accept. It is entirely possible, even probable, that in certain cases the process of adjustment to exogenous changes really has consisted of one or more "cycles" of

under- and over-compensation in the economy at large, and that these "cycles" have had a number of the objective characteristics of self-generating business cycles. This still does not justify the proponents of the exogenous-origin theory in their position, however, for they must then decide between two alternatives. If they assert that the adjustment cycle tends to damp itself down and disappear, they must explain why new exogenous changes keep occurring with the power and especially with just the peculiar frequency which are required to account for the observed business-cycle types of fluctuation in actual economic activity as a whole. This, it seems to me, they have not done satisfactorily. If they assert, on the other hand, that the adjustment cycle tends to perpetuate itself indefinitely, they can legitimately utilize the exogenous factors only as an explanation of the cyclical starting mechanism. They still have left on their hands the necessity of explaining satisfactorily the self-perpetuation mechanism. This explanation too, it seems to me, they have not given.

The exogenous-disturbance explanation of business cycles, for these and other reasons, thus seems unsatisfactory.[1] The alternative view will therefore be adopted here that, at most times and on the average, the fluctuations in general economic activity which take place over the period of the business cycle, as that term is ordinarily understood, are predominantly produced by the "endogenous" factors. These endogenous sources of disturbance are ones that find their own origins in some earlier aspect of general economic activity. From this proposition, the further conclusion then follows that business cycles themselves are predominantly self-generating processes.

No attempt will be made at this point to defend these latter propositions by further argument, however, or to test them objectively. Instead, they will simply be accepted as a preliminary working hypothesis. Assuming them to be substantially correct, we shall use them in the following

[1] Also see the comments on Schumpeter's position, in Appendix I, below.

pages as the point of departure for an analysis and "explanation" of self-generating business cycles. When this analysis is completed, the reader may then judge for himself as to whether or not the resulting description of business cycles fits the generally known facts closely enough to justify the initial working hypothesis. The contention in the present volume is, of course, that they do.

One other matter must also be made clear. This is the question of the relation here postulated between endogenous factors, exogenous factors and the actually observed movements of general economic activity through the period of the business cycle. These latter movements can be defined, obviously, as being simply the resultant of the simultaneous operation of the two sets of exogenous and endogenous forces, for these two categories exhaust the universe. It can then be argued that even though the endogenous factors are in some sense the principal "cause" of business cycles, still the endogenous factors themselves and the resulting cycles are not the most "important" elements in general economic activity at any moment. On this view, the most "important" elements in the position of current economic activity are, rather, the secular and other influences which stem chiefly from what have here been called the exogenous factors. We shall not attempt to deal with this contention, though it will be referred to later, for it is, in strictness, irrelevant to our present purpose. In this and the next following chapter, we shall endeavor to explain the internal dynamics of the self-generating business cycle, showing how each phase and development necessarily leads on to the next in an endless recurrent series, but we shall not try to say what part of the *total* of the actually observed changes in economic activity is accounted for by business cycles as thus understood. The explanation we shall advance is one which is consistent both with actual business-cycle movements that, because of the effects of exogenous factors, take place at high average levels of activity, and also with those that for analogous reasons take place at low levels of activity,

showing only feeble amplitudes of change and unimpressive peaks. The validity of our analysis does not depend in any way on the actual amplitudes of business-cycle movements or on the average levels of general activity around which each cycle actually moves. For the moment, therefore, we shall treat self-generating business cycles as an independent and self-contained entity. This caveat must be borne in mind throughout what follows. The part which the several types of exogenous factors play in the self-generating business cycle will be examined in more detail later.[1]

2

In the analysis of self-generating business cycles proper, we shall therefore continue the assumption made in earlier chapters. We shall suppose that we are dealing with a society in which the exogenous factors either remain constant or at least do not vary enough to produce important effects within the period of the business cycle. Under these conditions, we have already shown that, in the short period, changes in anticipations determine changes in investment (and in a part of consumption) and hence in the national money income. Let us now ask again: Precisely what is it, under these conditions, that governs changes in anticipations?

The obvious general answer, and again one recommended by common sense, is that the level of economic anticipations at any time is governed in some fashion by the previous history of economic activity, especially in the recent past. This is particularly true with respect to those people who, directly or indirectly, demand and supply investment funds.[2] When an expansion is getting under way after a prolonged depression, it is the very fact that the expansion *is* getting under way—that demand appears to be reviving on a wide front—which encourages potential investors to undertake new investments or to enlarge old commitments. When the

[1] In Chap. VIII, Sec. 10, below.

[2] Compare M. Abramovitz, *Price Theory for a Changing Economy* (1939), pp. 156, 157.

expansion is reaching a peak, it is the very fact that prospects for an increase in profits in the near future from new investment are becoming restricted, because so much new investment has already been made in the recent past and because the expansion in general demand seems to be slackening, that discourages investors—and thus, by a process suggestive of Grecian tragedies, precipitates the recession itself. So also, broadly speaking, for the other phases of the cycle.

In the absence of "exogenous" influences, to repeat, anticipations are thus governed in some fashion by the previous history of general economic activity. "General economic activity," however, is not a phenomenon of individual experience, nor is it something which can be measured easily, accurately and frequently from currently available statistics. In what follows, we shall therefore substitute for "general economic activity" the category "national money income" and shall treat changes in national money income as the chief determinants, within the field of self-generating business-cycle phenomena, of changes in general economic anticipations. This procedure can be defended, especially in relatively short-period analysis, on several grounds. Money income and its changes are objects of individual experience to almost everyone in a money-using society. Particularly in short periods, the national money income must obviously move closely with the total money volume of economic activity at large, if the two categories are defined comparably;[1] and the statistical data on money income are now both good and frequent, at least for the United States. Every "original" change in current investment or in current consumption, other things equal, alters current income in the same direction, and every change in current income, other things again equal, in turn alters current consumption or investment. It is true that in many cases the potential investor, when he makes his decisions, does not consciously look either at his own or at the national money income.

[1] That is, defined so as to relate to the production and exchange of goods and services.

Rather, he looks chiefly at the actual or the estimated future receipts of the enterprise he has under consideration. But as already remarked, national money income moves closely with business receipts, especially relative to short periods;[1] and relative to such periods, with possible allowance for a rather small lag (depending on the definition of income), changes in one magnitude can be taken as substantially the measure of changes in the other.

We therefore conclude, as a preliminary simplified hypothesis, that in the absence of "exogenous" disturbances,[2] short-period changes in anticipations are primarily governed by the recent history of the national money income, and particularly by income changes during, say, the preceding 3 to 6 months. We had previously concluded, however, that short-period changes in income are themselves governed primarily by previous changes in anticipations. What we have now done, therefore, is to construct (qualitatively) a closed chain of reasoning. In this closed chain, which becomes a logical circle unless dates are attached to the several variables, lies the principal key to the internal dynamics of the self-generating business cycle.

3

The next and crucial question is the question of the form of the relations which connect income and anticipations. In earlier chapters we assumed, without particularly stressing the assumption, that the relation which runs *from* anticipations *to* income is comparatively simple in form, as indeed seems reasonable enough; and we shall hereafter suppose that this relation is substantially linear. That is, we shall assume that a given change in anticipations will produce a roughly proportional change in the same direction in income, other things equal, and will produce it fairly promptly.

[1] On the more detailed definition and composition of the category "national money income" and its relation to business receipts, see Appendix IV, below.

[2] To avoid problems not strictly relevant here, it will also be assumed that the money supply is not indefinitely expansible.

Nothing in the observed behavior of the principal economic variables through the course of the business cycle seems seriously inconsistent with this hypothesis.

The relation which runs *from* income *to* anticipations, however, presents a more difficult problem. It is evident almost at once that this relation cannot be merely linear in form; for if it were, investors would have to act in most irrational ways. Suppose, for example, that investors' anticipations did depend directly on the absolute size of today's or yesterday's income, or even on the absolute amount of recent changes in income. Then suppose that national income has been rising by a constant absolute amount per unit of time and is expected to continue this rise into the future. Anticipations, and hence new investment, would therefore rise indefinitely by a constant amount per unit of time. But this continuous *increase* in new investment, to repeat, would imply irrational conduct on the part of the investor. If national income is expected to increase by a constant absolute amount per unit of time, a certain volume of new investment will be required in each unit of time to provide the additional plant and the like which the expenditure of the steadily increasing national income will call for. But once net-expansion investment has reached the required volume per unit of time, no further substantial *increases* in this volume will be needed, and to make them would clearly be irrational. Only that part of gross new investment which is undertaken in each period to effect repairs and replacements for the growing stock of capital equipment will continue to expand. In other words, *total* new investment will first increase rapidly, then become almost constant and then grow only gradually. All of this is contrary to the initial trial hypothesis that investment increases uniformly with income and by a constant amount per unit of time.

The assumption of simple linearity in the relation running from income to anticipations also has the defects that it ignores the reaction effects of fluctuations in investment on income and that even if it were somehow made internally

defensible, it necessarily implies that economic activity as a whole moves indefinitely in a single direction—expanding, contracting or constant in size—unless outside forces alter the movement. This pattern of behavior is, of course, inconsistent with the data of observation, which show ceaseless wide fluctuations in both income and investment.

What actually happens to income, anticipations and investment in the course of the business cycle is more nearly as follows. In the absence of intervention, the first step in the recovery that follows a contraction is usually the revival, at first on a small scale, of new investment—that is, the actual purchase of increased quantities of producers' goods and services. Indeed, this revival usually *is* the beginning of the recovery. But in many cases, if not all, the decisions to undertake this increase in current investment were necessarily made, for technical reasons, many weeks or even months before. Decisions to execute large plant extensions or changes, for example, usually cannot be made, blueprints drawn, specifications drafted, orders placed and the new work begun in a day or a week. That is, *anticipations* must have turned upward at a time when the national income was certainly low and was probably still falling. Then as the cyclical revival advances and moves into expansion, investment and income both rise fairly steadily; and so must anticipations. Finally, as the cyclical peak draws near, investment and income both begin to taper off, and an actual decline in investment commonly marks the onset of a general contraction. But again, because contracts already made cannot be quickly terminated and because stopping work before its completion often means losing the money already sunk, the decisions on which this decline in actual investment is based must have been taken weeks or even months before, and at a time when income was perhaps still expanding substantially.

This brief but not inaccurate sketch of certain business-cycle processes again shows clearly that anticipations cannot depend in linear fashion on the absolute size of income itself, for their major turning points usually *precede* those in in-

come. Rather, it suggests that many, if not all, investors must base their decisions on the apparent *rate of change* in income. When income has apparently stopped falling, or even while it is still declining but less rapidly than before, the shrewder investors are likely to conclude that the bottom is at last in sight and that actual recovery is not far off. By setting in motion the processes that will presently increase their current rate of new investment, they then hope to "get in on the ground floor," by taking advantage of favorable cost conditions to put their plants and inventories in readiness for the expected increases in demands. They thus help to hasten the actual recovery itself. When income is still expanding, but at a less rapid rate than before, the shrewder investors are again likely to conclude that the end of the boom is in sight. By decreasing their current rate of new investment, they then hasten the onset of general recession.[1]

This hypothesis that anticipations depend on the rate of change in previous income, especially in the recent past, will be elaborated and defended in the next chapter. For the moment, we shall simply adopt it without further argument. What it amounts to is the proposition that when income is increasing or decreasing at a constant rate, anticipations are constant, whereas when income is increasing at an increasing rate or decreasing at a decreasing rate, anticipations are rising, and conversely. If income fluctuates in a smooth sine curve, anticipations fluctuate in a similar curve, but with a *lead* of a quarter cycle. If new investment moves with anticipations, and if anticipations begin to turn down while income is still increasing but at a *less rapid rate* than before, it begins to become apparent why both expansions and contractions are eventually self-limiting and self-reversing—and hence, incidentally why business cycles in private economic activity are probably inevitable. The latter point will be developed subsequently.

[1] This hypothesis was outlined, with certain differences, in my paper in the volume for Prof. Irving Fisher, *Lessons of Monetary Experience* (1937), edited by A. D. Gayer.

This hypothesis as to the form of the relation between income and anticipations meets the broad requirements of the observational data, since it is a form of relation consistent with the existence of an unlimited series of cycles in general economic activity. It is also consistent with rational behavior on the part of investors. If income is increasing at an increasing rate, for example, and if this pattern of change is expected to continue into the future, not merely a constant but an increasing volume of new investment per unit of time will be required to provide the net expansion, plant repairs, replacements and the like which the spending of the increasing income will call for. This is not true of the hypothesis of simple linearity previously examined.

One other assumption contained in the preceding argument should also be made explicit. It is the assumption that a supply of investment opportunities exists, of which investors can take advantage whenever the state of their anticipations warrants. In modern societies there is always *a* supply, but the apparent size and attractiveness of this supply vary from time to time. The amplitude, intra-cycle trend and perhaps the duration of business cycles are correspondingly affected. This question will be examined later, in Chap. XIII.

4

To make the preceding hypothesis as to the internal dynamics of the self-generating business cycle stand out more sharply, the relations involved will now be expressed algebraically. In the equations given below, the expressions are made as simple as possible; various additions and qualifications will be made in the next chapter. The principal relations shown are as follows.

First, the national money income Y in any period is the sum of the individual money incomes received from the production and sale of consumption goods C, and of new investment goods I. Capital gains and losses are excluded, as before. The possible difficulty over the fact that particular individuals may actually receive their incomes either before

or after the period in which the relevant sales are made can be avoided by appropriate definitions.[1] Second, the volume of consumption in any period is governed by at least two groups of factors. (1) At times, part of consumption is governed directly by the current general level of anticipations, as when capital gains from the stock market are spent on consumption. For the present, however, we shall ignore this factor. (2) Most of consumption is governed by the size of income in the immediately preceding period.[2] This relation may be assumed to be linear. The *relative* size of this part of consumption, however, presumably moves inversely with income; a smaller *proportion* of income is spent on subsequent consumption when income has been high, and conversely. Third, the volume of actual new investment in any period is governed by the general level of anticipations A in an earlier period. Fourth, anticipations themselves are governed by the rate of change of income in, or rather *through*, a still earlier period. Finally, by substitution, income is therefore a function of its own values and rates of change in preceding periods.

For simplicity, in the following equations the terms that lead are written as though the reference were to the value of the term *at a particular point in time*. Actually, however, and particularly in connection with the lead of income over anticipations, this is incorrect. Anticipations depend not on the rate of change of income at particular points in previous time (which is expressed mathematically simply as dY/dt), but on the relation between its rates of change at a number of different previous times—on its changes *through* some period. The lag of anticipations behind income, which is shown below, should therefore be interpreted as a symbol for a "distributed" lag, with the values of the rate of change of income at the appropriate preceding points in time given appropriate weights. The same considerations apply to the

[1] See Appendix IV, below.

[2] The average lag here is one average income-expenditure period for individuals (see Chap. IV, Sec. 2, above).

other equations containing lags, though less important for them.

A number of different functional relations are involved in the equations. To avoid using cumbrous symbols for the several subordinate functions, we shall adopt a common simplification at most points, under which the equations $Y = f(X)$, $Z = f'(Y)$, and so on, are written $Y = Y(X)$, $Z = Z(Y)$ and so on. Subscripts denote time. The expressions for the relations described above are then as follows:[1]

$$Y_t = C_t + I_t. \tag{7.1}$$

$$C_t = C(Y_{t-a}). \tag{7.2}$$

$$I_t = I(A_{t-b}). \tag{7.3}$$

$$A_t = A\left[\left(\frac{dY}{dt}\right)_{t-c}\right]. \tag{7.4}$$

By substitution,

$$I_t = I'\left[\left(\frac{dY}{dt}\right)_{t-(b+c)}\right]. \tag{7.5}$$

Again by substitution,

$$Y_t = C(Y_{t-a}) + I'\left[\left(\frac{dY}{dt}\right)_{t-(b+c)}\right]. \tag{7.6}$$

Or, broadly,

$$Y = f(Y'). \tag{7.7}$$

The lag a is presumably short, perhaps 10 days or 2 weeks on the average. The lag $(b + c)$, as previously suggested, is perhaps 3 to 6 months.[2]

Since the relation between income and consumption is here assumed to be linear and probably does not depart greatly from linearity in any event, this relation cannot itself be the source of *cyclical* movements in income. The principal source is hence the relation between income and

[1] I am indebted to Wyllis Bandler for helpful criticism of the form of these equations and of the next following diagram.

[2] Also see Chaps. IX and X and Appendix III, below.

investment. Indeed, if we were interested *only* in cyclical movements, we could, without serious error, treat the first term in the right-hand member of equation (7.6) as a constant, to be included within the functional expression I' in that equation.

5

These expressions explain, I believe, the major part of the dynamics of self-generating business cycles, when "exogenous" factors of change are inoperative, and show the principal paths by which the cyclical movements work out.

The expressions say nothing, however, about the internal form of the cycles. So far as they are concerned, the cycles may be long or short, may be increasing, decreasing or constant in amplitude, and may show any one of a number of patterns in the same phase of successive cycles. Moreover, the mathematical form of the expressions is not inconsistent with a unidirectional movement that rises or falls at a constant or an increasing rate to infinity, without manifesting a cycle at all. It will be shown in the next chapter, however, that for at least some of the terms there are actually limits, not deducible from these expressions alone, on the indefinite continuation of changes in the same direction at a constant or an increasing rate. This is particularly true for new investment. Hence an eventual self-reversal of movements in either direction—that is, a cycle of sorts—is inevitable. The possible upper limit on the expansion phase of the cycle, in non-monetary terms, probably lies somewhere well short of theoretical full employment, and the lower limit lies at some level where substantial parts of the population are approaching as near to starvation as the general conscience will allow. But until constants drawn from direct observation can be determined, little that is more precise can be said.

The expressions are incomplete in certain other respects, partly because they are deliberately simplified. First, as already remarked, they do not show the chain of relations which runs directly from anticipations to consumption

(through the use of hoards or of consumers' credit, the spending of speculative capital gains and the like) and thence to income. These relations, which may be important,[1] will be considered again in the next chapter. Second, in the absence of more specific information equations (7.6) and (7.7) indicate that in the expansion phase, other things equal, income should increase at an increasing rate for perhaps half the phase, but at a decreasing rate for the rest, and conversely in depression. The data for the United States since 1919 (monthly since 1929, annual before), however, suggest that income increases at the most rapid *rates* in the relatively early stages of expansion, thereafter increasing at a constant or a slowly declining rate, whereas in depressions the rate of decline is slowest at the beginning and then progressively more rapid until near the bottom. To depict this behavior would require a special selection of constants in the algebraic expressions. Finally, terms should also be introduced into the last three expressions to allow a certain amount of "play" in these relations, a plus or minus tolerance before one change compels the other.[2] The simplified expressions given above, however, contain the main part of the cyclical hypothesis here at issue, with respect to the general form of the reciprocal relations between anticipations and income.

[1] As new investment shrinks in depression, income becomes to a greater and greater extent a function of consumption alone, and conversely. This suggests that the preceding cyclical analysis applies in strictness only to that part of income which is above the physical or the socially tolerated minimum standards of living. As will be shown at the end of the present chapter, however, it would be conceptually possible to construct a very similar cyclical hypothesis on the basis of fluctuations in consumption alone.

[2] One of the dangers in carrying very far the application of powerful mathematical tools to economic phenomena is precisely the danger of overlooking or concealing these and other highly important elements of "loose-jointedness" in the economy—elements which contribute some of its most characteristic and most puzzling features.

For example, the monetary counterpart of the decision to reduce new investment is a decrease in the quantity of "active" money, either through actual hoarding or through the repayment of bank loans. In an economy with no "play" at all in its mechanisms, and with complete uniformity of anticipations, one dollar of such net hoarding would start a general depression. On these questions, also see Chaps. IX and X, below.

Two other comments should be made. First, the terms for the absolute amounts of I and Y in the left-hand members of equations (7.3) and (7.6), respectively, can also be replaced by their first derivatives, if desired, thus theoretically solving the difficulties over the choice of unit time periods. The graphic form of equation (7.3) as thus modified, an equation which relates the *rate of change* in investment (dI/dt) to the general level of anticipations, is given by Diagram VII. That is, as anticipations rise, investment at first increases at an increasing rate. But beyond some rate K, further increases in anticipations cannot induce very much additional *increase* in the current volume of new investment, because of the (assumed) limits on the expansion of the monetary system and because substantial further increases in new investment, beyond some point, would trench on minimal consumption needs. (These limits will also be explored further in the next chapter.) After the rate K is reached, the rate of increase in new investment begins to decline as anticipations rise further, and after a time the current volume of new investment itself becomes constant. Here the value of dI/dt is hence zero. This explains the upper cusp of the curve. When anticipations fall, investment likewise falls at an increasing rate at first (dI/dt is here drawn as having a negative value, to indicate the direction of the change). But this rate of decrease too, obviously, cannot become indefinitely large unless momentarily, since the *total* amount of the decrease (the sum obtained by integrating dI/dt during the decrease in new investment) cannot exceed the (finite) amount of new investment at the previous peak. At the limit, when anticipations have fallen very low, current new investment is reduced to the small volume (roughly constant in short periods) required for those minimal repairs and replacements that will just allow the depression volumes of output of consumption goods and other investment goods to be maintained. Then dI/dt is again substantially zero. This explains the lower cusp of the curve. The relation as a whole, incidentally, is another example of irreversibility.

Second, the preliminary explanation of self-governing cycles just presented rests upon the assumption (among others) that a substantial change in the general level of anticipations will produce, more or less rapidly as the case may be, a substantial change in the same direction in the aggregate volume of current spending on consumption and especially on new investment, and hence in current income. This assumption could be defended even for societies in which net new investment spending is continuously zero, however,

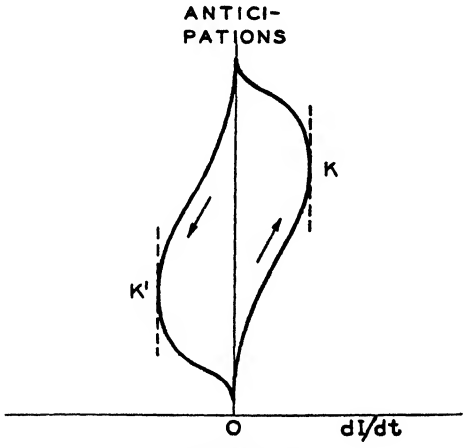

DIAGRAM VII.

if we could suppose that in such societies most exchanges are carried on by the use of money and that this money can be hoarded, and if income is not continuously at the bare subsistence level. Here a fall in anticipations would induce hoarding and hence declines in consumption spending, particularly on durable consumers' goods, and income would fall until, at the limit, it had reached the minimum subsistence level. Conversely, a rise in anticipations would stimulate dishoarding and hence increases in consumer spending, particularly on durable goods; and income would rise until, at the limit, hoards were zero and the money supply (if variable) was at its maximum. That is, a rudi-

mentary "business cycle" could exist even in the absence of all net new investment.[1]

6

It should also be emphasized that the processes just outlined, by which changes are transmitted through the economy, all *take time*. If they did not, the economy would jump instantaneously from boom to depression or from depression to boom, instead of moving in its actual and roughly cyclical path. A general realization that merely the *rate* of increase in income was falling off would lead everyone to prepare for the end of the boom, and at once the economy would plunge to the bottom of a depression. So also conversely. In actuality, substantial periods are required for each step: for a change in the rate of change of income to be generally perceived; for the resulting change in anticipations to affect investment decisions and commitments; for these to alter the actual volume of new investment; for this to change income and consumption; and for the change in income to react on anticipations. These lags are an essential part of the dynamic process of the business cycle.[2] No

[1] This suggests, as has often been pointed out, that for many purposes the significant line of differentiation is not that between consumption goods and investment goods but is the essentially quantitative difference between goods whose utilities are expected to be given up over shorter and over longer periods. Durable consumption goods and most investment goods would then be put in the same category. For the analysis of business cycles, however, this is not the most helpful procedure. In the main, *decisions* to buy or not to buy investment goods apparently precede by substantial intervals decisions to buy consumers' goods and hence have a special significance for cyclical problems—even though the *execution* of the two types of decision may be more nearly simultaneous, as remarked elsewhere. The principal exception to this usual order of precedence in making decisions appears to be those purchases of consumers' goods which are influenced by stock-market or other speculative profits. Even increased installment buying of durable consumers' goods is not usually important in the *early* stages of business recovery.

[2] The lags also presumably account in large part for the fact that reported absolute changes in investment and in income seem to move quite closely together. Depending on how the two terms are measured, income follows actual investment with little or with no lag; but *investment decisons*, on this hypothesis, move with *previous changes* in income. The parallelism between investment and income is

attempt will be made here to estimate them accurately, but the available evidence suggests that it now takes as much as 4 months or more for the bulk of the effect of a change in today's income to work through the circle of relations and react upon income itself.[1]

In the preceding equations, the general level of anticipations, which in earlier chapters served faithfully as a happy combination of *deus ex machina* and universal solvent for otherwise intractable problems, now ceases to be a necessarily separate factor. It is equivalent to, and can be replaced by, some summary expression for the recent history of income. For mathematical and statistical purposes, should that prove desirable, it can therefore be dropped completely out of the picture.

---

probably also increased so far as consumption varies directly with anticipations, instead of directly with income received.

[1] This figure is based on the data for the average circular velocity of money and its components (see Chap. IX, Secs. 2 and 3, below).

Chapter VIII

THE RESULTING DESCRIPTION OF THE BUSINESS CYCLE

I

ALTHOUGH no statistical investigation will be attempted here, it is worth while to make a check of sorts on the preceding simplified hypothesis by describing the development of the business cycle in terms of this hypothesis, and then deciding whether or not the resulting description is broadly consistent with the generally accepted facts. We retain the assumptions that such "exogenous" factors as changes in techniques, tastes or population are inoperative, that there is no governmental or central-bank intervention and that the money supply is not indefinitely expansible.

To this point, in order to make the broad pattern of relations clear, we have usually talked about the economy as a whole: that is, about *the* level or rate of income, investment, anticipations and so on. When we give even the most superficial attention to empirical types of information, however, it becomes obvious that any such simplified treatment is inexact and may be misleading. Changes take place in different parts of the economy, whether these be geographical or occupational areas or vertical or horizontal sections, at different rates of speed, usually with different timings at the turns and even, for substantial intervals, in different directions. In particular, anticipations often differ widely as between different groups of suppliers and demanders of investment funds, and may change in different ways with respect to different fields of contemplated investment itself. These diversities are found in the most highly organized economies, are even more typical of them than of economies which are oriented around a small number of products, and

impose various marked and otherwise puzzling characteristics on the movements of the business cycle itself. They should be borne constantly in mind. It must also be remembered, as pointed out at the end of the last chapter, that the processes involved all require time for their completion.

To get started in the cyclical or quasi-cyclical sequence, let us suppose that a recovery phase has somehow been initiated, and that there is an adequate supply of investment opportunities awaiting exploitation. Without defining the recovery process too closely at the outset, assume that the anticipations of the producers in a given field have risen, and that they have begun to make repairs and replacements that were deferred in the depression. That is, investment increases. The investment will be pushed to the new short-period equilibrium volume, in this particular field, which is determined by the new and higher anticipations of these producers and of the people who supply the funds (whether the suppliers be the producers themselves or other people does not matter for the argument). The process is that depicted by Diagrams I and III, above, which apply to individual investors (with the obvious qualifications) as well as to the economy as a whole.

This new investment means that the orders and receipts of those who make equipment and the like, and hence their incomes, are increased. The *national* money income, other things equal, hence rises. It is possible, of course, that all of the increase in income will be hoarded or used to reduce the money supply by the repayment of bank loans. But this is unlikely. Since, by assumption, a recovery is under way, the average level of anticipations in the rest of the society is at least not falling, and some of the increase in income, therefore, will usually be spent. This spending, whether on consumption or on investment in other fields, in turn means that still other groups find their incomes increased, so that the national money income as a whole again rises.

Thus a growing wave of general expansion begins to develop in the recovery phase, in consequence of an initial

rise in the anticipations of certain groups alone. We have here supposed that the first objective evidence of recovery is the making of deferred repairs and replacements. In actuality, the beginning of recovery may take this form, or it may appear as a replenishment of certain inventories that are low, or as a rise in the price of certain securities and other relatively liquid titles to already existing assets. For present purposes, the precise form is immaterial. Substantial new investment in plant and other equipment which represents a net addition to capacity, however, is unlikely to appear in the very first stages of a recovery, unless it is based on extra-cyclical investment programs previously embarked upon.

Whatever the initial form, when these evidences of improved sentiment have begun to appear, the resulting actual and expected increases in spending, on a widening front, usually operate to raise the anticipations of various producers and other potential investors outside of the group which started the movement. Then these latter groups, in turn, begin to make outlays for deferred repairs and replacements, to replenish inventories and even to start net additions to capacity. Thus another overlapping wave of expansion is started. In consequence, a still larger number of individuals and firms find that their actual incomes or business receipts are increasing. As long as the general level of anticipations continues to rise or at least does not fall, this increase in incomes and receipts in turn means that more and more funds are currently spent on consumption or investment than before. Then anticipations rise on a still broader front, and the mounting tide of increases in income and business receipts itself soon reaches substantial proportions over much of the country.

2

These successive waves of expansion, which in part overlap one another, may be thought of as following either of at least two different patterns. First, the managers of each enterprise may revise their anticipations upward, and hence

increase their current volume of replacements and net additions to capacity, only once in each cycle. On this view, the expansion phase of the cycle is simply the history of the effects of these once-for-all revisions, which occur at different times and in a succession of different enterprises. The expansion phase then takes the form of a rising curve, rather than a single vertical step, only because the various enterprises do act at different dates and because different periods are required for the several effects to work out.[1] Or, second, each enterprise may revise its anticipations several times in the course of the expansion phase, each revision after the first being based in part on that increase in national income and in general demand which the enterprise's own earlier expansion itself helped to initiate. This is the bootstrap trick. A series of self-generating and overlapping spirals of expansion results. Finally, as in housing, public utilities or the heavy industries, enterprises may execute programs of new investment on a time basis longer than that of the business cycle proper, and in consequence of actual or expected changes in population or its distribution, techniques, tastes or the like. But these latter phenomena lie outside of the range of problems of the strictly "self-generating" cycle (though they affect the intra-cycle trend) and will not be considered further at the moment.[2]

Presumably that new investment which takes place only in large, expensive units, and which needs time to carry out, conforms more nearly to the first pattern, so far as such investment responds to the business cycle at all. But almost every enterprise also makes types of investment (as in repairs, replacements or inventories) which rest on anticipations that are usually revised upward several times in the course of the expansion phase of the cycle, as a part of the self-generating process of overlapping spiral expansion itself.

[1] Compare Abramovitz, *Price Theory for a Changing Economy*, p. 148 n.

[2] The "acceleration principle" may also come into operation under either of the first two patterns. This is not something *additional to* the relations outlined above, however. Regardless of the state of *present* demand, entrepreneurs will not increase present capacity unless their anticipations for the future warrant the step.

For a large segment of manufacturing, commercial and even agricultural enterprises, therefore (so far as the latter types of enterprise play an initiating role in the business cycle at all), the second pattern is probably more nearly representative. The second pattern is also applicable so far as improved anticipations lead *directly* to increased consumption, as through installment loans or the spending of cash hoards held by individuals. The increased consumption increases income, raises consumers' anticipations higher and thus induces still further increases in current consumption relative to current income.

Once the self-generating expansion process is well under way, it will continue for a substantial period if no adverse "exogenous" factors disturb it. The steps by which it is carried along are obvious enough, on a broad view. They run from anticipations, through investment and usually consumption to income, and back to anticipations, in one or many spirals of interaction as the case may be. The *continuation* of the expansion, however, implies the existence of certain conditions which must be emphasized.

To take the extreme case, suppose that, at the start of the recovery phase, one firm alone increases the volume of its current new investment in a given period but in the next time period allows its investment to drop back to the previous level. Then national income per unit time period will be raised, at most, only by the amount of the original increase in investment;[1] and the firm will receive, in the average case, only its (very small) proportionate share of the increase in the national income. If the anticipations of the original firm now drop back to their former level, as assumed, and if the anticipations of all other firms and individuals remain unaffected by the increases in their incomes, the general expansion must evidently come to an abrupt end. But this

[1] To make this statement strictly accurate, the unit time period must be taken as the average period of circulation of "active" money, discussed in Chap. IX, below. If a larger or a smaller unit period is taken, the increase in income will have a proportionately different relation to the increase in investment.

behavior is evidently contrary to our fundamental hypothesis, which is that anticipations are governed by the rate of change of income in the recent past. When an expansion continues cumulatively over some period of time, therefore, what must obviously be happening is that the *average* level of anticipations for the country as a whole is rising. This rise in the average level, as already suggested, may come about in either or both of two ways. First, the firm that originally increased its current volume of new investment may again fail to maintain this higher volume. In that event, the general expansion is subsequently carried forward by other individuals and firms. These groups increase their current investment either because their own incomes or business receipts have increased, or because they see increases in other spending, incomes and receipts and expect to benefit themselves later—or sometimes merely because of the spread of an expansionist "psychology," based as yet on little real evidence. Or, second, the firm that began the increase in new investment may maintain and even enlarge this increase. These effects are then added on to those of the secondary expansion of investment, by others, which this firm originally induced.

The crux of the matter is, of course, merely the proposition that during the life of a cumulative expansion the *total* volume of new spending must be increasing, whatever the alternative patterns of change by which the increase in the total is obtained. This is the essential condition which must be realized if the expansion is to continue. It means, in monetary terms, that the current sum of increases in total money stock plus decreases in hoards must be greater than the current sum of decreases in total money stock plus increases in hoards. That is, the stock of "active" money must be increasing in size (except so far as there are changes in its circular velocity; such changes are presumably negligible in short periods).[1]

[1] Again see Chaps. IX to XI, below, where these quantitative questions are examined—as are the causes and effects of changes in the propensities to hoard,

We have hitherto been talking chiefly about the effect on income of initial changes in investment outlays. It will be argued later, however, that much the same conclusions apply to initial changes in consumption outlays. The channel through which the increased spending takes place probably does not matter greatly after the first wave of impact effects has worked itself out. What *is* vital here is simply the proposition that continued increases in the total volume of current spending of all sorts are the essential condition for the continuation of a process of cumulative general expansion.

3

Eventually, however, the expansion comes to an end and gives way to recession or even depression. In terms of our earlier simplified hypothesis, this downturn comes in sight when national income, although continuing to rise, increases at a decreasing rate. Then anticipations begin to fall; this reduces current new investment, though usually with a lag; income stops rising and begins to decrease; and the recession is under way.[1] Can this process be explained in more objective terms?

Any one or all of three different sets of factors can come into play, after the expansion phase has gone some consider-

---

spend, consume and invest, discussion of which is not necessary in the present connection.

So far as bankers and other security buyers initiate the increase in "active" money, the increase reflects, especially, that increase in the capitalizations assigned to assets and to prospective income streams which is produced by the rise in their own anticipations.

[1] "Unexpected" gains or losses, realized as the cycle develops, also influence anticipations. But this is simply another way of saying that changes in income affect anticipations; the fact that the income change was unforeseen is irrelevant. Unexpected gains and losses result from the conversion of *ex ante* inequality between saving and investment into *ex post* or realized equality.

"Capital" gains or losses from the sale of already existing assets are not a part of income as defined. When they appear on a large scale, however, as in security-market booms or crashes, they may affect anticipations directly. On this, see the end of the present section.

able distance, to retard the further expansion of new investment and thus bring on a downturn in general activity. They all work to reduce the expected profitability of *increases* in the current rate of new investment, and even to reduce the expected profitability of additional investment made at merely the *same* rate as in the recent past. These factors begin by being felt in certain fields alone, as a rule, and at first may not retard the general expansion elsewhere. But when they come to affect any large area of the economy, the increase in the national total of new investment and hence in national income will soon slacken, the national average level of anticipations will fall, and the end of the expansion and the beginning of recession are then not far away.

The first factor is changes in the ratio between the current costs of making the finished products of a particular enterprise or industry and the current prices for the products, or in the ratio which is expected to prevail in the near future. If costs and prices rise together as the general expansion proceeds, the absolute increase in costs does not discourage further new investment in the given enterprise or industry, other things equal. But when costs rise or are expected to rise so sharply, relative to prices of finished products, that the prospects for adding to profits by increasing the output of finished products are seriously impaired, further new investment in the industry is obviously likely to seem less attractive for the time being, and will slacken if it does not stop completely. (We need not explore here the question of the precise point, under different types of conditions, at which this slackening takes place.) This is one effect of the familiar "bottleneck" situation. The bottlenecks not only discourage current increases in the current rate of new investment in the industry concerned but discourage even the maintenance of the *same* rate of investment.[1] That is why they are often so disastrous.

[1] But investment in the industry *causing* the bottleneck is likely to be *stimulated*. To this extent, the effect of the bottleneck on the aggregate national volume of new investment is temporarily modified.

The bottlenecks, however, are not phenomena which in their origin are independent of all other aspects of the cyclical process. With a given general institutional setup, they are a function of the amount of expansion in the recent past, and especially of the recent speed of this expansion. The more rapid the expansion, beyond some point, the less the time for "interstitial adjustment" and the greater the likelihood of serious bottlenecks. But the bottleneck phenomenon is something which, in the first instance, is independent of changes in the nation-wide *average* level of anticipations, and is peculiar to the particular enterprise or industry concerned. In itself alone, therefore, it need not start a *general* contraction.

The second factor is the cumulated amount of investment which has already taken place through the recent past, especially within the last year or two, in the fields where further new investment is now contemplated. What usually seems to happen in a general expansion is that the rate of new investment (including net additions to capacity) in any one enterprise or field is likely to increase at an increasing rate at first, and then move along at a fairly constant rate for a time, but that eventually investors come to realize that plant, for example, has been built up (or, it may be, "modernized") in that enterprise or field to an extent which will take care of any probable demand for its products for some time to come. That is, investment here eventually reaches a short-run "saturation point," even when cost-price ratios remain unchanged.[1] Additional new investment in these enterprises or fields therefore slackens, and perhaps drops to merely the minimum repairs and replacements necessary to carry the current volume of output. This cumulated amount of investment in the recent past must also be weighed, clearly, not only in absolute terms but also relative

[1] Conversely, if new investment has been at a very low level for some years, as in depression, the resulting growing deficiency of replacements and technical improvements makes additional investment progressively more attractive, other things equal.

to the size of the now current national income. Other things equal, for example, the short-run saturation point for additional blast furnaces is perhaps twice as high when national income is twice as large (that is, perhaps twice as many additional furnaces will be built as would have been built, all other things equal, had national income been only half as large). This saturation factor is also one which, in the first instance, is independent of changes in the nation-wide average level of anticipations; in its origin, it is peculiar to the particular enterprises or fields concerned and again need not start a general contraction.

The third factor is a little less obvious but is of more general character. Even if new investment in given fields does not go forward rapidly enough to reach short-run saturation points and even if cost-price ratios for finished products remain unchanged, still the expansion in investment as a whole cannot continue indefinitely. The limitations which new investment ultimately encounters in any period are of a fundamental character. They are created partly by the character of the patterns of income distribution in individual-capitalistic economies, but chiefly by the nature of the uses which the higher income classes typically make of increases in their incomes.[1]

To illustrate, again suppose that, in a particular era, both the total money volume of general economic activity and the national money income are somehow increasing steadily, by constant amounts per unit time period, and that they are expected to maintain this rate of increase indefinitely.[2] We need not inquire, for the moment, how this steady increase came about. Then anticipations are also constant. In this situation, a certain amount of new investment will be required in each period to provide the additional plant, equipment and the like needed to take care of the further increase in the demand for finished products which is expected in the

[1] I am especially indebted to P. Bernard Nortman for emphasizing the importance of these factors.

[2] Compare the analogous discussion in Chap. VII, Sec. 3.

next following period, in consequence of the expected further increase in incomes. But once new investment for expansion purposes has increased to the required volume, this net-expansion part of the total of current gross new investment will remain substantially *constant* per unit time period, since anticipations are constant. No further large increases above the now current rate will be needed, and none will seem attractive at the current and now constant level of general anticipations. Only the new investment made to effect repairs, replacements and the like will continue to expand indefinitely.

The increase in this latter type of investment in each unit time period, however, will necessarily be (on the average) only a fraction, and a rather small fraction, of the net expansion investment made in each preceding period. The *continuing increase* in total gross new investment per unit time period will therefore also be relatively small, after net expansion investment has reached approximately the volume required to meet the expected constant increases in the demands for finished products. Still more important, it is obvious that on any plausible numerical assumptions the absolute amount of the increase in gross investment per unit time period, after the initial increase of net-expansion investment to the levels required by the constant amount of increase in income has been achieved, cannot be anything like equal in absolute size to the increase in income which calls it forth. This is true because after the initial adjustment period, the further increase in gross investment will be due almost wholly to increased replacements and the like alone. Hence the increase in investment cannot account for more than a fraction of the continued *increase* in income itself.

Meanwhile, however, what is happening to consumption? We can answer this question most easily by somewhat arbitrarily dividing all income receivers into two classes. One contains those individuals whose incomes are "low"—incomes typified by wages and the smaller salaries. The other contains those whose incomes are moderate or "high"—

incomes typified by profits, interest, rentals and the like. The fact that many individual recipients of the latter types of incomes actually fall in the low-income group does not matter here. What is important for the present argument is the relative size of the income, not its source.

Now when national income as a whole increases steadily over some period, these various types of individual income usually do not all increase uniformly, as is familiar. This unevenness is not, however, the crux of the matter. To make the argument unequivocal, let us suppose that all types of income *do* increase proportionately as the national total rises. Then what happens?

The key lies in the uses people make of the increases in their incomes. Presumably people in the "low" income groups spend on additional consumption all, or substantially all, of any increases in income which they receive. So far as their actions are concerned, therefore, the happy spiral of increases in incomes, in expenditures and hence again in incomes could perhaps continue indefinitely. Since the expenditures of this group in each period usually increase only in consequence of prior increases in income, they make no contribution to any further increase of income in the next following period, but at least they do nothing to prevent such an increase. Even this, however, is not true of those in the moderate- and the "high-" income groups, and especially not of the latter. For them, an increase in current income may at first produce some increase in consumption, but much and perhaps most of the increase will be "saved." That is, the marginal propensity to consume of these classes is less than 1; they increase (decrease) their current volume of consumption-spending by less than the amount of any increase (decrease) in their current incomes.[1] The money savings, in turn, will be invested to as great an extent as possible. It has already been shown, however, that when investment has

[1] See Chaps. X and especially XI, below. In the higher income brackets, this propensity is probably almost zero with respect to income changes over periods up to perhaps a year or more.

once been increased by enough to meet the requirements of the constant increase in national income here assumed, the opportunities for further substantial *increases* in the current volume of gross investment will be confined to the relatively limited demand for funds to make additional replacements.

This tendency to hoard a part (and probably an increasing part) of current increases in income, as incomes rise above some level, is important with respect to the incomes actually received in cash by individuals in the middle- and especially in the higher income groups. It is probably even more important with respect to business enterprises; their managers are in law the agents of the individual owners but, in the case of most of the bigger corporations, are largely independent of the owners over short periods. The corporation managers, like individual income receivers, are likely to find growing difficulty in reinvesting the current *increases* in their business receipts beyond some point, under the assumed conditions of a constant amount of increase in national income per unit time period and hence in general activity. The fundamental reason is the same for them as for individual income receivers: namely, the lack of investment opportunities which seem attractive at the current level of anticipations, after new expansion investment has once been increased to the required volume. Then business enterprises, like the wealthier individuals, begin to hoard.

On both counts, therefore, a point will eventually be reached at which the society as a whole is currently spending less on goods and services than it is currently receiving as income from their production. Beyond this point, it will clearly be impossible to maintain the assumed constant rate of increase of income, in the absence of governmental or other intervention; anticipations will fall, and with them investment; and presently a general downturn will be under way. It may take months, or even in extreme cases several years, for these changes to work out, but their eventual

appearance is inevitable under the conditions assumed at the outset.[1]

The same conclusion holds good if we start with the assumption that income is increasing not by a constant absolute amount per unit of time, but by a constantly *increasing* amount. Here anticipations will rise, and hence new expansion investment will itself increase indefinitely. It will increase, however, only by a *constant absolute amount* per unit of time. The society's total expenditures, therefore, will again presently fail to keep pace with income, which is increasing by an *increasing* amount.[2]

In other words, the very nature and method of working of modern individual-capitalistic societies prevent an indefinite continuance of expansion. Moreover, by eventually retarding the expansion itself, they make a subsequent recession inevitable. The argument to this effect in the immediately preceding paragraphs can be summarized as follows: (1) As national income increases, expenditures on consumption made by the moderate- and especially by the high-income groups fail to increase by the same amount as their incomes. (2) At first, the non-consumed part of the increases in income

[1] The turning point will presumably come earlier if the incomes of the "high-" income classes increase more rapidly in expansion than the national average—as is conspicuously true of most business profits.

When expenditures begin to lag behind current increases in income, either money hoards must increase or the money stock fall or both. The available data on hoards are only annual, however, and are inconclusive with respect to these changes, which are the ones that occur shortly before the cyclical peak (see Chap. IX, below).

The converse is also true in the case of a constant *decline* in income, when anticipations are *low* and constant. Here dishoarding will eventually retard the decline and thus help to *raise* anticipations.

[2] The general statement is that since a dollar of new investment must produce more than one additional dollar's worth of finished goods in order to pay for itself, a given expected increase in the total demand for finished products will justify only a smaller absolute amount of new investment. Hence the absolute increase in investment must necessarily be less than the total expected increase in demand—and hence less than the total expected increase in income. For this purpose the "demand" for finished products must be taken as the total additional demand expected during the expected life of the investment goods.

is invested. (3) The increase in investment cannot continue indefinitely, however, at so rapid a rate as the expected increase in national income. Once the volume of new investment has been approximately adjusted to the expected increase in income, new investment will necessarily cease to expand *by the same amount per unit of time* as income. (4) Since consumption is also failing to increase as rapidly as income, a point must eventually be reached at which not all of any further increases in income can be spent either on consumption or on investment goods. (5) At this point, effective hoarding will therefore begin to appear, sales of finished goods will cease to increase as rapidly as before, the increases in income will also slacken, anticipations will fall, and a recession will start.

The crux of this inexorable limitation on expansion hence lies in two facts. First, the marginal propensity to consume of the moderate- and high-income groups is less than 1 with respect to changes in their incomes (and probably falls as income rises). That is, these groups do not increase or decrease their current consumption by the full amount of any change in their current incomes. Second, after the initial adjustment is made, the volume of new investment which is appropriate to any expected amount or rate of increase in national income is less, at the level of anticipations corresponding to this expected increase in income and at the current marginal propensities to consume, than the volume required to maintain the expected increase in income itself. Given the previously outlined relations between national income, anticipations and investment, an eventual recession is therefore inevitable.

It should also be pointed out that the limiting conditions just outlined are not something separate from or independent of the two limiting factors discussed earlier in the present section. Rather, they are all integral parts of a single whole. The appearance or the approach of saturation points for new investment in particular fields is the consequence of the relation, between expected income changes and the amount

of new investment appropriate to these changes, which was referred to in the preceding paragraph. Again, the adverse movement of cost-price ratios would do no damage to *total* income if it did not induce hoarding; and bottlenecks could be adjusted, given sufficient time and again no hoarding.[1] Both are harmful precisely because they *do* induce hoarding.

In terms of the diagrams of earlier chapters, both the change in cost-price ratios and the growing stock of investment goods in existence cause the demand curve for further investment to become increasingly inelastic, as investment increases, at any *one* level of anticipations (Diagram I). The eventual failure of the society to spend all of the current increases in income on new goods and services, on the other hand, works to reduce the current rate of increase in income directly and thus to lower anticipations themselves. In terms of our earlier analysis, it reduces the elasticity of new investment with respect to anticipations after some point is reached (Diagram III). We shall not try to appraise the relative practical importance of these limiting factors here or to estimate the order in which they come into operation.

Finally, the existence of an eventual limitation on expansion can also be deduced directly from the equations of the preceding chapter, if it be granted (as seems reasonable on every count) that the demand-and-supply schedules for new investment become increasingly inelastic beyond some point as investment itself increases. A given increase in the *rate* of increase of income is required to produce a unit increase in anticipations [equation (7.4)]. But beyond some point, a unit increase in anticipations must produce a smaller absolute increase in the current volume of new investment than before, as is evident from the shapes of the curves of Diagrams I and III and the conditions that determine these shapes. Therefore income increases less rapidly than before, other things equal [equations (7.3), (7.6)]; anticipations drop; and hence investment, and again income, must like-

[1] The economic effect of most bottlenecks is a function of the reciprocal of the length of time held in view.

wise begin to drop soon in *absolute* terms. That is, even if saturation points or unfavorable cost-price ratios do not develop, the cessation of expansion and perhaps the onset of depression are eventually almost inevitable, and become increasingly imminent the farther and faster the preceding expansion has gone. At least in the economic world, no magnitude which is directly governed by the *rate* of increase in another magnitude can itself continue to increase indefinitely.

This latter self-limiting mechanism is the only cause for the downturn which is recognized in the simplified hypothesis of the preceding chapter. The other limiting factors just examined, however, are not something different from or inconsistent with this latter mechanism. Rather, they constitute a part of the processes through which changes in the rate of change of income influence anticipations, hence new investment and hence income itself. Either cost-price bottlenecks or investment saturation points, or both, commonly appear in at least certain fields after investment expansion in those fields has gone some substantial distance, and this retards the rate of increase of new investment there. Total expenditures on consumption also fail to increase with income after the expansion of income has gone some distance. All three factors hence retard the rate of increase in national income as a whole, other things equal, and this causes *average* anticipations for the country at large to drop. Thus the first seeds of the eventual downturn are implanted.

In the preceding discussion, one factor which a number of writers have placed at the heart of their explanations of the onset of recession has received little attention. This factor is the movement of market interest rates, especially on bank loans. In many actual cycles in the past, the later stages of expansion witnessed sharp increases in market rates; these increases were followed chronologically by crises and even panics in the money markets; and numerous firms were bankrupted which would have remained entirely solvent if given more time to meet their obligations. This type of

development was characteristic of many American business cycles before 1914.

It would be wrong, however, to regard either such increases in market rates, or the limitations on further currency and bank-deposit expansion which they reflect, as being factors in any sense independent of or additional to the factors already described. In itself, an actual or an expected rise in interest rates has no greater significance than an actual or an expected rise in any other cost of comparable importance. It *need* not precipitate a crisis or a recession. A sharp rise in interest rates has commonly been taken to mean that trouble is now definitely coming, and in past years experience has lent much support to that view. But in the absence of central-bank or governmental intervention, any such rise in rates is merely a result, a symptom, of the preceding expansion. The rise shows that demands are pressing on current supplies of credit, and often that lenders' anticipations have already begun to fall. In the absence of intervention, however, the rise does not contribute to a *further* fall in general anticipations, except in the same measure that any other rise in costs thus contributes. It is a "cause" of the subsequent downturn, if one develops, only to the same extent that any other comparable increase in costs is a cause. The interest-rate factor, therefore, can be included under the major categories already examined, and does not require separate treatment.[1]

4

The preceding propositions concerning effective hoarding, which will be amplified later, contain the crux of the immediate *mechanics* of the eventual check on business-cycle expansions. Whatever the motivations involved—whether they be the effects of changes in specific cost-price ratios, of specific short-run saturation points or of changes in the general level of anticipations at large—the *objective* thing that sets an eventual limit to any cyclical expansion is the

[1] Also see the end of Chap. V, above.

failure of the economy to respend currently, on new goods and services, all of the money income which is currently received from the production of such goods and services.

That is, the crux is increases in effective hoarding, whether through increases in actual money balances currently held idle, or through the use of money-income receipts to repay bank loans or otherwise decrease the money supply. All the forces that we have hitherto been examining produce their effects, in the proximate sense, through the common channel of changes in the volume of effective hoarding. In the absence of governmental or other intervention, and unless the marginal propensity to hoard drops to zero (which never happens except temporarily or in panic inflations), the inevitable increases in the size of hoards as income rises prevent the respending of *all* of each current increase in income. This restrictive influence is commonly counteracted in the early phases of any broadly based cyclical expansion, it is true. In such periods the rise in general anticipations causes previous hoarders to dishoard and causes bankers to create additional money, in amounts more than sufficient to meet the initial demand for increased hoards from those whose current incomes are *first* raised by the expansion itself. But neither of these offsets to increased hoarding is unlimited, obviously. As more and more people come to enjoy increases in current incomes, the *absolute* amounts that each group as a whole adds to hoards also increase; this retards the current rate of increase in income itself; and this presently affects the anticipations of those bankers and others who just previously had been rapidly increasing the total money stock. It follows, therefore, that *any* rate of increase in income must eventually slacken. Then general anticipations will rise less rapidly than before (or will fall), and the increase in income itself will eventually come to an end and give way to a decline. How far the expansion as a whole will actually run before it is thus stopped is determined by the degree and universality of the initial increases in anticipations, by the extent to which people reduce pre-expansion hoards to carry

on the early stages of the expansion itself, and by the internal technical limitations on increases in the supply of demand deposits and currency. Substantially the converse relations operate in contraction, as will be shown presently.

One other point should also be emphasized, because of its prominence in current discussion. This is the fact that the working of the cyclical mechanism just described does *not* depend on rigidities in prices and costs, or on any stickiness in their adjustments to new situations. Such inflexibilities work, on the whole, to intensify cyclical movements rather than to reduce them, but their existence is not a condition necessary to the appearance of such movements. Even with perfect flexibility, fluctuations in general anticipations and hence in hoarding would appear, for the reasons already given, and would bring about fluctuations of a cyclical character in economic activity at large.

At this point a brief digression may be permitted, on the social implications and significance of these changes in hoarding. The preceding analysis of the relations between hoarding and general economic activity does not in the least depend for its ultimate validity on any assumptions about private ownership of the means of production, the form of distribution of income, the wages and hours of labor or the share of labor in the total national income. Nor does the analysis rest on anything to do with the Marxian surplus-value concept. Hoarding will appear and will produce in *some* degree the effects just described, in any economic society in which three conditions are met. They are, first, that some or all of the members of the society have incomes above the bare minimum necessary to sustain life; second, that these individuals have freedom of choice and action as to what they do with the excess of their incomes above the subsistence minimum; and, third, that the employment and incomes of a substantial fraction of the other individuals in the society be dependent in important degree on the continued respending of this excess. This third requirement has actually been met only in societies in which economic

activity has been carried on predominantly by, and in return for, money payments, but the existence of a money regime is not theoretically indispensable to income hoarding. If all three of the conditions stated are fulfilled and even if there is no "investment" at all, then the economy will undergo cycles of a sort in its general economic activity because of fluctuations in the expenditure of income on consumption.[1]

The effects of changes in individual hoarding are vastly intensified, however, when the society is also operating in a framework of individual industrial capitalism. Here many people's livelihoods are obtained from making things—complex capital goods—which other people not only do not have to buy in order to live but which they are certain to buy only intermittently, as their own estimates of future prospects vary.[2] The fluctuations in the purchase of such goods or, conversely, in the hoarding of non-consumed money-income receipts are the principal proximate cause of modern business cycles. The effects of hoarding are likewise intensified when the distribution of income is highly uneven, so that most of the members of the society receive incomes not much above the subsistence minimum while a relatively small number get much larger incomes. This situation concentrates control over changes in hoarding in a relatively few hands, in the absence of intervention, and increases the amplitude of the probable fluctuations in hoards.

Now the ultimate motive which induces people to change the current volume of their current hoarding is the desire to increase or at least to conserve, through such changes, the real value of their income streams and of their assets. On a

[1] As shown at the end of Chap. VII, Sec. 5, above.

[2] In primarily agricultural capitalism, and even in a commercial capitalism not resting primarily on the exchange of industrial-capital products, total activity and income might vary in a rudimentary self-generating business-cycle pattern. But in such societies, total employment need *not* thus vary. The demand for goods and services would fluctuate but, in the main, would not disappear almost entirely at intervals, as does the demand for many industrial-capital goods, and the intensity of utilization of men and resources (crop cycles apart) would not fluctuate directly with total money demand.

very broad definition of the term, the ultimate motive is hence the pursuit of individual "profit." Socialist writers of various schools have therefore reached the conclusion—though by routes very different from those sketched in the preceding pages—that the way to eliminate the effects of changes in hoarding and hence to eliminate unemployment in modern societies, and to raise average employment and income themselves, is either somehow to abolish the profit motive, or to make it innocuous by such devices as abolishing private ownership of the means of production or forcing a more nearly equal distribution of incomes.[1]

This latter conclusion, it seems to me, cannot be unequivocally established from the facts and inferences now under consideration. As long as men are men, all or most of them will try to improve their own levels of economic living and their own economic power, even though it be at the expense of other men; and this is really all that the "profit motive" comes to. As to the distribution of income and the ownership of the means of production, even most non-Socialist economists now agree that a more nearly uniform distribution of income is desirable; indeed, it is now being brought about in most countries through tax and inheritance laws. Many would also argue that the private ownership of many of the important natural resources and basic industries and the receipt of private incomes from them should be modified. These changes, however, would not necessarily eliminate either unemployment or business cycles or increase total average income, if any substantial area were left free for individual hoarding. To take the extreme case, suppose that all incomes are equal and that the State owns the principal natural resources and basic industries; but suppose also that total individual hoarding and its changes retain the same volumes and the same motivations (the

[1] Note that changes in the current *rate* of profit, whether actual or expected, cannot alone explain either cyclical or secular changes in activity. It is also necessary to know the positions and shapes of the demand-and-supply curves for new investment. With a given rate of profit (*i.e.*, of market yields), activity may be either high or low (see Chaps. II to V, above).

conservation or increase of income streams and assets) as at present. Then we should still have much the same cycles in general activity as we have now, and these cycles would force either cyclical unemployment, or cyclical changes in average individual incomes and standards of living comparable to those from which we now suffer.[1] The reader may nevertheless argue that both the volume and the changes in individual hoarding would actually be far smaller with equal incomes and govenment ownership than they are now, the fluctuations in income and employment therefore far smaller, and their average levels far higher. We shall not extend the present digression to these questions, however. Our primary purpose has only been to investigate the conditions which actually do bring about changes in hoarding in individual-capitalistic societies and to explain the effects of these changes.

5

The fact that the first appearance of any or all of the conditions described in the preceding sections does not at once end the general expansion and start a recession is due to the circumstance, commented on before, that no economy is tightly synchronized or uniform in its movements. In the first place, if a short-run saturation point for further new investment is reached in any one enterprise or field or if cost-price ratios move unfavorably there, investors are usually able to turn for a time to other fields, so that the current rate of increase in new investment in the economy as a whole does not fall off. As already suggested, in the expansion phase, new investment in each enterprise or field probably reaches some maximum rate rather quickly in most cases, once it has begun, and thereafter either merely holds this rate or even begins to decline. But the *number* of enterprises or fields (speaking loosely), in which new investment is

[1] In these circumstances, the only assured solution is so complete a regimentation and rationing of economic activity that no room is left for the hoarding of individual income receipts.

currently being made on a larger scale than before the expansion started, increases as the expansion itself progresses and increases until near its end. This view is, of course, consistent with the obvious fact that expansion in many industries is directly dependent on prior expected or realized expansions in others, either through the acceleration principle (as in the case of orders for equipment) or from the direct effects of increased consumer spending.

In the second place, decisions to contract investment in a particular field may later be reversed, if the economy as a whole seems to be continuing its expansion notwithstanding.

Finally, as remarked elsewhere, substantial and varying lengths of time are usually required before the full effects of a given significant change in anticipations can work themselves out in terms of income. A high general level of anticipations may become established rather early in the recovery phase, for example, but the corresponding expansions of inventory, plant, money supply, output and income may require months or even years to become fully developed. This is conspicuously true where the new investment takes the form of plant alterations that are complex and costly, such as building a new steel mill. Here a single investment decision may hold the firm's current investment outlays at a new and nearly constant higher level for many months on end. Moreover, although in most cases new investment can be reduced more rapidly when anticipations fall than it can be increased when they rise, in the case of big undertakings it would often be folly to stop before the work is completed, for the previous outlays might then lose all value.

These differences in the timing of new investment in different enterprises and fields, in the periods required for carrying out investment programs and in the periods required for the effects of new investment to work out on income are thus a vital part of the explanation of the business cycle. As remarked previously, if such lags and differences in timing did not exist, no real "cycle" could appear at all. The economy would jump instantaneously from depression

to boom or from boom to depression. The same factors also help to account for the otherwise puzzling fact that national income as a whole can apparently expand at a nearly constant rate for substantial periods, without thereby stopping the absolute current increase in the volume of new investment [as would otherwise seem to be required by a rigid interpretation of equation (7.5)].

6

Eventually, however, impediments to the further *expansion* of new investment in the near-by future appear in a growing number of enterprises or fields—whether because investment-goods costs rise, or from cost-price bottlenecks, from short-run investment saturation points or for other reasons. When this happens in some unmeasured but presumably large proportion of the economy, income will still increase, but it will increase at a less rapid rate than before. Then, as is by now familiar, the general average level of anticipations begins to fall; presently new investment itself ceases to expand and begins to contract; national income follows a similar path; and the recession has started.[1]

Now neither general logic nor the preceding equations make a subsequent serious recession *inevitable*. It is entirely conceivable that, through some sort of rigid self-control imposed to prevent excessively abrupt expansions, even an individualistic economy could work itself up to a high level of activity and then stay there with little or no subsequent decline, keeping the rate of new investment at just the level required for replacements and (let us say) secular expansion. But clearly this is most unlikely to happen in a society made up of individuals who are free to act and whose judgments

[1] But decisions to contract investment are not simultaneous throughout the economy; and because of existing contracts or other commitments, varying but often substantial periods intervene between such decisions and the slowing down of actual investment spending. This is one reason why most statistical time series relating to any large proportion of the economy, except those especially influenced by financial transactions, commonly show rather rounded domes in the vicinity of their maxima instead of sharp peaks.

incline to exaggeration both ways. The shrewder individuals, when they think the end of the expansion is in sight, will try to "beat the gun"; and by preparing for a thunderstorm when a rain cloud peeps over the horizon, they may well bring on the hurricane. Only if the contagion of pessimism does not spread and—a "real" rather than a merely psychological stipulation—only if the men and resources thrown out of the production of investment goods by any necessary contraction in such production are promptly absorbed elsewhere, thus preventing an absolute decline in the national income, can a more or less serious recession be avoided.

It should be emphasized that on this view, neither "underconsumption" nor "oversaving" necessarily brings on the decline. If they were the only factors in play, the expansion would presently slow down and cease, but it would not necessarily give way to recession. What is important is the effect of the slackening in the rate of expansion, which "underconsumption" and "oversaving" produce, on anticipations. "Overinvestment" also does not, as such, cause the downturn. Rather, it is the later *slackening* of new investment which is significant; and this is itself due, again, to a revision of general anticipations. Nor is it, I think—contrary to Keynes's position here[1]—the *actual* disappointment of expectations which chiefly produces a decrease in investment, and hence the downturn. The germs of contraction become active much earlier. It is the decrease in *prospects*, for further expansions of total profits from further new investment, which does the larger part of the actual damage.

Even when a general self-generating downturn in anticipations, investment and income has got well under way, as a matter of historical fact it frequently does not deteriorate into a severe depression. Forces acting from outside the self-generating cycle may come into operation, and may work to slow down or stop the decline in anticipations or income for substantial intervals. They may even reverse the decline and thus start a new expansion. Large harvests selling for

[1] *The General Theory of Employment, Interest and Money*, pp. 315-316.

high prices, booms in particular parts of the economy (as in housing) which are not predominantly related to cyclical phenomena, large increases in the foreign demand for commodities or capital, the starting or the ending of a war, even a runaway stock-exchange boom[1] or other factors may have this effect. Or governmental or central-bank intervention can conceivably produce it. But failing such *dei ex machina*, the economy will plunge on into full depression by almost exactly the reverse of the processes which made it expand. The downturn is also intensified so far as declining anticipations act *directly* on consumption by checking installment sales, sales of luxuries and the like.

In the case of the United States, cyclical downturns have likewise been intensified frequently by those money-market crises, drastic reductions of bank loans and even waves of bank failures, to which our banking and monetary arrangements have made us peculiarly liable in the past. In no other country has this particular aspect of the recession phase of the cycle been so devastating.

How far will the depression go? The curves of Diagrams II and III in themselves suggest no necessary limit, short of the complete cessation of all money-using economic activity. But in actuality, this complete paralysis never develops. Investment may fall to very low levels, and at first income and consumption fall with it. The rapid decline in general anticipations, however, reflects not only a decline in optimism but also a marked shortening of time preferences (the other component of anticipations, as defined). Because of the shortening of time preferences, many people, whose current consumption is being forced down to what are for them minimal levels by the decline in their incomes, begin to use money hoards and the proceeds of the sale of any remaining

[1] The unbridled optimism of speculators for the rise in the market, and the consequent increase in security prices, may stop the previous decline in the anticipations of business men and actually start a new business expansion. Thus the decline in American business activity in 1927 hardly did more than slow down for a bit the rise in stock prices, and soon business activity itself picked up again—*after* a new rise in stock prices. See later comments on this point.

assets to arrest the decline in their consumption; and private philanthropies are increasingly called upon. Even in the absence of government deficit spending, few people are allowed to starve or freeze to death in modern societies; minimal subsistence-consumption is somehow maintained. Moreover, in the moderate- and "high-" income groups, current consumption commonly falls much less rapidly than current income. For all these reasons, the *rate* of decline in consumption as a whole therefore eventually slows down. This change is at once reflected in income, which is now derived in much the largest part from current consumption spending. That is, both consumption and income now fall at a less rapid rate than before. Under the simplified hypothesis outlined previously, this decrease in the rate of fall of income then gradually produces a rise in the anticipations of at least certain groups of potential investors, with respect to certain fields of activity, and hence brings about a gradual rise in gross new investment. Thus the seeds of a new recovery are planted.

7

This seemingly paradoxical rise in anticipations and the consequent revival of new investment, at a time when the depression itself may still be deepening somewhat in absolute terms, can nevertheless be explained rather readily. When a depression has been severe and of long duration, the physical need for repairs and replacements becomes more and more urgent, inventories are low, the replacement of durable and semi-durable consumers' goods becomes increasingly desirable, and a backlog of possible technical improvements accumulates. When the decline in income at last begins to taper off, so that some sort of bottom is at last in sight, the more enterprising business men will again seek to "get in on the ground floor"; and by putting their plants in better shape and perhaps by replenishing certain inventories at depression prices, they will endeavor to benefit more fully from that revival in activity which they cheerfully hope is

now fairly near at hand. By their own actions, they thus hasten the revival itself.

In other words, the anticipations of certain groups of potential investors with respect to certain fields of activity here move in advance of, and for the time being opposite to, those of other investors and of consumers. Here again *differences* in anticipations as between different groups and as between different fields of activity are of critical importance. It would actually be quite misleading to conceive of a *single* level of anticipations, held uniformly and changing synchronously throughout the whole economy.

If the yields of certain common stocks be taken as a (reciprocal) index of the general *average* level of anticipations, the foregoing considerations also make it clear why some new investment may appear well before average stock prices turn up. Stock prices in turn, however, often rise before business activity as a whole has begun to expand. Stock speculators too seek to "beat the gun" and, by bringing about a rise in stock prices, may materially accelerate the rise in the general level of anticipations. This effect of the stock market will be examined again at a later point.

The process of revival is likely to be relatively slow and painful at first, however, as suggested by Diagram II in Chap. II. In the depths of depression, even a comparatively large initial rise in anticipations and a corresponding shift to the right in the demand curve for new investment funds produces (because of the extreme inelasticity of the supply curve) only a comparatively small initial increase in the volume of investment itself and hence in income, and therefore only a comparatively small secondary increase in anticipations. It may take several such spirals of self-generating reaction before the economy is really firmly launched on the expansion phase represented by the middle and right-hand ranges of Diagrams I and III; and meanwhile the economy will continue to "bump along the bottom" in a discouraging way, with little objective indication that any recovery is actually in the making. The important thing for present

purposes, however, is the fact that even the bottom of the depression is *not* a position of stable equilibrium. Forces are always at work which, no matter how slowly at first, will eventually start a new self-generating cyclical process. The longer the recovery is delayed the greater will be the accumulation of deferred repairs, replacements and technical improvements, and hence the greater the pressure toward recovery itself—unless, indeed, some extra-cyclical blow has been dealt to anticipations, so severe that the economy, in effect, consigns itself to an enduringly lower standard of living. Barring this possibility, the instability of the cycle at the bottom and its instability around the peak are quite closely symmetrical.

8

This verbal check on the simplified hypothesis of the preceding chapter is reasonably consistent in general terms with the broad known facts about business cycles, when abstraction is made from the "exogenous" factors; and is sufficiently consistent with them to justify the initial assumption, made at the outset of the last chapter, that business cycles *are* primarily self-generating in character.

It also suggests, however, that certain modifications should be made in the detail of the previous algebraic expressions. Allowance should be made for the *direct* effects of changes in anticipations on a varying fraction z of consumption outlays C; and also for the fact that the cumulated amount of investment in the recent past, relative to the size of current national income, has an effect upon current investment anticipations and hence on investment which is in part independent of recent changes in income itself. This latter effect can be depicted roughly by introducing a term containing the ratio between current income and the absolute amount of investment through the fairly recent past, say perhaps 2 years or more.[1] Other things equal, current invest-

[1] Analogous ideas can probably be applied, relative to a much longer period to such phenomena as the "long" construction cycle (see Sec. 9, below).

ment tends to rise when this ratio is relatively high, and conversely. Since the cumulated investment in the recent past is, in turn, a function of still earlier anticipations and investment, however, and hence of still earlier income, no fundamentally new variables are thus introduced into the expressions as a whole. For the same reason, no serious error is likely to result from omitting, in the following equations, a term for income changes in periods more remote than those there shown. A third modification should be made to allow for current or expected changes in the average cost-price ratios R of finished products. These ratios are in turn functions of both the amount and the speed of the general expansion in the recent past. The expansion is measured most easily by changes in income, however, so that again no fundamentally new variable is introduced.

There are three other points. The fact that *average* anticipations, investment and income may all maintain a quite stable rate of change for substantial periods, in the middle sections of the expansion phase and probably of the recession phase, is best allowed for merely by the selection (when numerical substitutions are attempted) of appropriate constants in the equations. Second, the diversity of movements between different parts of the economy, and especially the differences in timing, are of central importance, but they cannot be represented algebraically without the use of much more complex expressions than are here worth while. They are simply something which must be borne constantly in mind in interpreting the equations. Finally, the expressions ought to be drawn to allow a certain amount of "play" in their relations, a plus or minus tolerance before one change compels another;[1] but this too will not be attempted here.

The principal relations involved are as follows. First, as before, current income is the sum of current consumption and investment. Second, that part of current consumption which is *not* directly dependent on anticipations, $(1 - z)C$, is governed by income in the preceding period, as before;

[1] Also see Chap. VII, Sec. 5, above.

though a variable fraction, this is much the largest element in total consumption outlays. Third, the other part of consumption, zC, *is* governed by current anticipations. Fourth, current investment is now regarded as governed by three factors. One is anticipations in a previous period, as before. Another is the ratio between current income and the cumulated amount of investment through the recent past. The latter cumulation is indicated simply by a Σ, with limiting dates. The last is the ratio R, between costs and prices of finished goods in a previous period; for simplicity, this slight lag is not shown. Fifth, this ratio R is governed by both the amount and the speed of the change in income in the recent past. If we suppose the relevant increments of income to begin at a time $(t - g)$, then the determinants of R can be expressed as a function of the amount of the change in income per unit of time down to the present, expressed relative to the size of current income itself (which last is multiplied by the number of time-units g in the total period under consideration, to give a roughly comparable basis for measuring the speeds of changes in income). Sixth, as before, anticipations are governed by the rate of change of income itself through an earlier period. Seventh, a revised expression for current investment is secured by substitution. Finally, as a rough approximation, current income is again shown to be governed by several functions of previous income. The same convention as before is used with respect to symbols (which carry no dates) for the various subordinate functions. The several relations are then as follows:

$$Y_t = C_t + I_t. \tag{8.1}$$

$$(1 - z)C_t = (1 - z)C[Y_{t-a}]. \tag{8.2}$$

$$zC_t = zC'(A_t). \tag{8.3}$$

$$I_t = I\left[A_{t-b}, \frac{Y_t}{\Sigma_{t-c}^{t}(I)}, R_t\right]. \tag{8.4}$$

$$R_t = R\left(\frac{Y_t - Y_{t-g}}{gY_t}\right). \tag{8.5}$$

$$A_t = A\left[\left(\frac{dY}{dt}\right)_{t-c}\right]. \tag{8.6}$$

By substitution,

$$I_t = I'\left[\left(\frac{dY}{dt}\right)_{t-(b+c)}, \frac{Y_t}{\Sigma_{t-e}^{t}(I)}, \frac{Y_t - Y_{t-g}}{gY_t}\right]. \qquad (8.7)$$

Hence, again by substitution,

$$Y_t = (1 - z)C[Y_{t-a}] + zC'\left[\left(\frac{dY}{dt}\right)_{t-c}\right] + I'\left[\left(\frac{dY}{dt}\right)_{t-(b+c)}, \frac{Y_t}{\Sigma_{t-e}^{t}(I)}, \frac{Y_t - Y_{t-g}}{gY_t}\right]. \qquad (8.8)$$

Or, broadly,

$$Y = \Phi(Y''). \qquad (8.9)$$

It is evident from equation (8.8) that, since the function $(1 - z)C$ is approximately linear and the function zC' unimportant at most times, the principal source of cyclical movements in income is again the relation between income and investment, plus some contribution from that small part of consumption which is directly dependent on anticipations. The changes in investment, in turn, are chiefly governed by previous changes in income. These changes operate through several channels, of which the most important is again the effect on anticipations. The form of the relations connecting income and anticipations, relations running through investment and through a small but sometimes important part of consumption, is such that within the matrix of institutional conditions found in individual-capitalistic societies, endless cyclical or quasi-cyclical movements in general economic activity and in income are inevitable. As pointed out in the last chapter, however, the foregoing equations are so general in form that they can say almost nothing about the period, internal form, amplitude or average level of the cycles themselves.

The lags indicated are again to be regarded as "distributed" lags. Of the lags shown here but not in the equations of Chap. VII, the guess may be ventured that e is substantial,

probably running up to several years, whereas in most cycles g will not exceed a year or two at most.

As remarked previously, no attempt will be made here at a systematic statistical testing of the self-generating cyclical hypothesis outlined in the present and the preceding chapters, and the inadequacy of the easily available data would make such a testing inconclusive in any event. It is interesting, however, to compare the movements of national income Y graphically with the first differences of income ΔY; the latter are a rough equivalent of the term dY/dt. This comparison is made on Chart IV of Appendix III, below, for the United States in 1929–1939. Since the available data are semiannual only, the chart is of limited significance. The relations it portrays are, however, broadly consistent with our hypothesis. Changes in investment usually produce changes in income, other things equal, only at or through some subsequent period; and so far as changes in income are governed by prior changes in investment, it is evident even from these semiannual data that the *changes* in the current volume of investment must usually have preceded the absolute changes in income at the main turning points. The chart also shows a curve for the estimated changes in private investment, as computed from income changes and the volume of government deficit spending. This computed curve moves in substantial consistence with our hypothesis.

9

The explicit purpose of the preceding equations has been to construct a model of behavior, an "explanation," which is sufficiently general so that it will contain the essential characteristics of *all* self-generating business cycles, but which at the same time is sufficiently simplified so that it presents only the vital internal mechanisms which do make the cycles self-generating.

It follows further, however, that the equations have the shortcomings which their restriction to the achievement of this purpose involves. In particular, they contain none of the

coefficients of the important variables. It would be impossible, therefore, to pass directly from these equations to a numerical description of any one actual business cycle. The equations describe the general form of a self-generating cyclical process but give no clue to the magnitudes of the variables whose interactions comprise this process.

No attempt will be made here to undertake this task of statistical substitution—of trying to determine the values of the several coefficients. Any such endeavor would far outrun the objectives of the present study. Moreover, it is likely that the results of such an undertaking would be puzzling. The irregular impact of the various "exogenous" factors, especially those of types which Professor Mitchell calls "random," is likely to make any simple set of coefficients, appropriate to one actual cycle alone, quite inaccurate when applied to the next. In addition, slow-acting secular influences, not all of them easily susceptible of statistical measurement or numerical expression, may well be found to impart systematic changes to the values of the coefficients themselves, thus making a second set of equations necessary to arrive at the values of the coefficients through time. The complexities of the statistical procedures, therefore, might easily become serious, although they would in no way impair or modify the basic self-generating hypothesis itself.

Without exploring these problems further at this point, we can still say something of a general sort about the different forms which actual business cycles may take, while remaining within the boundaries of our basic hypothesis.

It is a matter of familiar comment, for example, that a number of different types, shapes and even durations of cyclical or quasi-cyclical fluctuation can be distinguished with a certain degree of assurance in the actual movements of general business activity. Some fluctuations are long, some short; some are large in amplitude, some narrow; some show a steady rise to a rather sharp peak, followed by a precipitous decline, while others exhibit only comparatively rounded domes with no clearly marked apex; and there are

various cross combinations. Moreover, it frequently happens that several consecutive sets of fluctuations, each of which would be called a "business cycle" on most definitions, are nevertheless so strung together that they obviously make a related group, with a marked central tendency of rise or fall running through them. This latter phenomenon has led some students to distinguish between what, to avoid controversy, we may call "short" business cycles, on the one hand, and "intermediate" or "long" business cycles on the other; the 50- to 60-year cycle is presumably a different type of thing.[1]

There is probably no one key to these differences. A certain amount of progress toward a systematic explanation, however, can probably be made in terms of a differentiation between cyclical or quasi-cyclical fluctuations of which the outstanding characteristic is a great increase in investment in heavy capital goods, especially of the construction type (railroads, power plants, housing), and those which are based primarily on increased investment in inventories and in the making of postponed repairs and replacements. Speaking broadly, it seems reasonable to expect the inventory-and-replacement cycle to be *relatively* mild, relatively brief and of the rounded-dome rather than the sharp-apex type. On the other hand, the construction type of cycle should be harder to get started but, once under way, should acquire much more momentum. It should therefore be expected to be relatively long, large in amplitude, and to terminate rather sharply when the current supply of construction-investment opportunities approaches exhaustion. Moreover, this drive toward increased construction investment may well be expected to run over a substantial number of years. In that event two or more "short" business cycles of the primarily

[1] I should like to acknowledge my indebtedness to Prof. A. D. Gayer and to W. W. Rostow for illuminating comments on the problems here at issue, based on their studies of the English experience in the nineteenth century. Rostow, observing a number of English cases in which a sharp-apex cycle was followed by a rounded-dome cycle, has advanced the excellent suggestion that in deference to the skyline of the recent New York World's Fair, this constellation be called the Whalen cycle.

inventory-and-replacement cycle type may be superimposed on the underlying and longer construction cycle. The latter will then give the "short" cycles a rising intercycle "trend." This last seems, on a broad view, to be substantially what happened in the United States between 1921 and 1929, and also in both England and the United States in certain periods in the middle of the nineteenth century, in consequence of the several railway booms.[1]

It is now necessary, however, to ask ourselves more explicitly what we mean by the phrase "*business* cycle." A moment's reflection shows that not all of the types of fluctuation referred to in the last two paragraphs can be legitimately placed under a single general head. They cannot all be "explained" in terms of a *self-generating* cyclical process, at least not of the sort described in our basic hypothesis. The primary "cause" of the railway cycles, for example, was the development of certain techniques of transportation and the appearance (after long delay!) of a sufficiently venturesome state of mind among substantial numbers of prospective investors. The "cause" was not in the least a self-generated affair explainable in terms merely of the effect of prior income changes on the general level of investors' anticipations. Again, the residential construction cycles, which seem to run in long waves of something like two decades, are only in part related to previous income changes. Rather, in some part certainly and probably in largest part, they arise from the fact that it takes a relatively long time for a given stock of housing to become either worn out or inadequate for the size of the population.[2] The level

[1] But in England, the most pronounced railway booms were produced by British financing and construction of railways for *other* countries, that is, by the export of capital.

[2] To this extent, the long housing cycles *can* be described as "self-generating." The replacement and expansion of housing apparently does not proceed *pari passu* with its wearing out or with population growth but at first lags behind; as the need for replacement and expansion grows, the pressure behind the investment dam gets greater, until at last the dam gives way; then new construction expands relatively rapidly and in due course is overdone; and finally a new era of depression in construction sets in. This type of cycle, due primarily to cumulative maladjustments

of income is a factor of importance, of course, for investors must believe that income is likely to remain high enough so that newly constructed housing can be sold or rented at a profit. The short-cycle fluctuations in the *general* level of anticipations are presumably also of importance, since more housing will be built (other things equal) when general anticipations are high than when they are low. But the main part of the long housing cycles cannot be explained merely in terms of the changes in income at large and their effects upon general anticipations.

What, then, are *business* cycles? Without further discussion, we shall simply elaborate somewhat on Professor Mitchell's familiar description[1] and shall define them as follows. First, business cycles are fluctuations which appear nearly simultaneously (that is, with lags or leads of not more than a few months, in most cases) in the great majority of business activities, and which are not confined to certain types of activity alone. They consist of fluctuations in both the money volume and the physical, or "real," volume of production, employment, sales, income and the like but need not necessarily entail parallel fluctuations in all prices. Second, they are fluctuations which are not primarily seasonal in character. Third, they are the *shortest* of the various types of (irregularly) recurrent waves of non-seasonal fluctuation which business activity as a whole exhibits. Fourth, the fluctuations are self-generating. By this is meant that a

---

in the relation between stocks, replacement and expansion, probably also appears in many other fields (perhaps in hogs, for example) where the ratio between *average* stocks and *average* annual output is high. It provides another example of the importance of lags and maladjustments. But in all these cases the "self-generating" process, if it be such at all, is obviously quite different in type from that resting on the connection between the *general* level of anticipations and income, and described in the equations above. In these latter cases, the self-generating process, if there be one, rests chiefly on the connection between anticipations in a *specific* field of investment and the size of existing stocks of end products in that field.

On these questions also see the extremely interesting paper by J. B. D. Derksen, which appeared after the present study was written, in *Econometrica*, April, 1940, especially pp. 97–99, 105, 113.

[1] *Business Cycles: The Problem and Its Setting* (1927), p. 468.

logical and sufficient explanation of the processes by which each phase of the cycle leads into the next, in an endless sequence of expansions and contractions, can be formulated in terms solely of the interactions between the various important components of business activity itself, without reference to such external, or "exogenous," factors as changes in techniques or population. An explanation of this sort is provided by the hypothesis, as to the relations between anticipations and income, which was presented in the preceding equations.

It follows that *business* cycles, as thus defined, are something different from all the other types of more or less wavelike fluctuation previously referred to. The strictly self-generating, business-cycle component of actual economic fluctuations can both be sharply distinguished in logic from the other components, and can usually be identified with fair confidence in terms of statistical measurements. The business-cycle component is the one which produces those changes in outlays for inventories, repairs and replacements that are common to the great majority of business activities at given times, and those changes in outlays for net expansion that are undertaken or suspended on the basis of changes in current anticipations with respect to periods of, at most, the next few years.

The *business*-cycle type of fluctuation is therefore something which is superimposed on movements of other sorts. In many cases, the general external form of the business cycle may be substantially influenced by these latter movements. If a protracted and widespread expansion of construction is in process, for example, the "trend" of the contemporary business cycles will be upward, other things equal, their expansion phases will be relatively long, and their contraction phases will be both short and mild. If a business-cycle contraction begins at or shortly after the time when such a construction boom has fallen away, on the other hand, the contraction phase of the current business cycle will be relatively long and severe, other things equal,

and the cycle as a whole is likely to have the sharp-peak rather than the rounded-dome form.

10

In the preceding chapter and in earlier sections of the present chapter, we made a sharp distinction between the factors which are involved in the internal dynamics of self-generating business cycles and those "exogenous" factors which are not an organic part of, and hence are not primarily governed by, this self-generating process itself. What we are doing when we make this distinction, however, is merely to divide the total of the real universe of actual fluctuations in general economic activity into two parts whose sum, in each period of time, is the total real universe itself. In the present and the preceding chapter, we have been primarily occupied only with the self-generating business cycle, but we have never pretended, and could not, that it alone constitutes the whole of reality.

The exogenous factors are important for two reasons. First, as just remarked, they are one component of the total phenomenon of actual fluctuations in economic activity and, for some purposes, are the more significant component. Second, as remarked earlier, they may alter very materially the internal development and "trend" of the self-generating business-cycle processes themselves, and in particular may drastically raise or lower the average levels of activity around which business cycles fluctuate. In the hypothesis which we have developed above to explain these processes, anticipations were treated as a function of the rate of change in income alone, and income as a function of variables which, in turn, depend ultimately only on anticipations. In the real world, however, the exogenous factors also operate, and may alter either the general level of anticipations or the level of the national income quite independently of self-generated changes in these latter magnitudes. They may either move the economy out of a slump, or terminate a period of prosperity rather suddenly, or change the rates at which the

phases of business-cycle expansion or contraction progress. This was made clear by the brief discussion, in the preceding section, of the relations between the several easily distinguishable types of general economic fluctuations themselves. Hence no account of business cycles can be adequate which does not give the exogenous factors a good deal of weight.

Most of these exogenous influences are of a familiar sort, and we need do little more than list them. They include, first, such things as changes in crop production and prospects; changes originating abroad in international payments, including international gold movements; changes in foreign economic or political conditions, including war scares or outbreaks; and governmental or central-bank intervention in financial or general economic activities. All of these influences may work rather suddenly. Violent stock-market changes also belong in this group. A bad stock-market crash, in itself reflecting primarily a readjustment of inflated security prices (*i.e.*, of the anticipations of *certain* groups) to current realities rather than any serious actual or expected contraction in production or income, can react upon anticipations in the minds of investors and consumers at large and can depress them out of all proportion to the "real facts," as in 1929–1930;[1] and a security boom can do the opposite.

Second, there are other groups of "exogenous" influences which work more gradually and which commonly operate to alter the trend, amplitude and perhaps the duration of the

[1] Much of the severity of the 1930–1932 depression in the United States may well have been due to the blow dealt general anticipations by the 1929 market crash (which was itself due in part, of course, to such "exogenous" factors as the mounting tide of financial and general economic difficulties abroad). The initial violent drop in anticipations, on this view, started a downward spiral of declining investment, income and anticipations on which no substantial brakes were operative before the middle of 1932; at that point the inauguration of a catastrophic series of bank failures introduced a new set of depressing "exogenous" factors. An example of an opposite situation, in 1927, was commented on at an earlier point (compare the similar view of J. R. Hicks, in *Economica*, February, 1935, p. 18). Account must also be taken, however, of the genuine changes in current spending, especially on consumption, which security price movements impose upon those who treat part or all of their capital gains as current income.

phases of the cycle rather than to introduce sharp turns. Such factors are changes in prevailing production techniques or a lack thereof; changes in tastes, population growth and distribution; large and enduring alterations in the tax system; and the shifting impact of the "long" cycles which appear in some fields such as housing and which were commented on in the preceding section. Technical improvements, for example, raise the demand curve for investment funds at given levels of *general* anticipations (Chap. II, Diagram I), thus increase current investment and income and thus, other things equal, exert a secondary rising effect upon anticipations themselves.

Finally, varying effects are produced by non-cyclical changes in the flexibility of prices and of cost-price ratios, in the expansibility of the money supply, in production techniques, tastes, and the distribution of population and income, and in other "institutional" factors which are sometimes difficult to treat statistically.

In recent years, a number of economists have endeavored to show that what are here called "exogenous" factors—those not originating within the self-generating business-cycle processes—are in some way "more important" than the latter processes themselves. In one sense this contention is meaningless. It is as meaningless as it would be to contend that the water and the physiography of the Bay of Fundy are somehow "more important" than the tidal bores which periodically disrupt that Bay. The water, the physiography and the tidal bores are all components of the aggregate phenomenon which we call the Bay, and which could not exist as it actually is without each of them. Each is as "important" as the others, though the student is entitled, if he pleases, to single out the tidal bores for his special attention.

In another sense, however, the contention is of great significance. It is significant because the self-generating business-cycle processes obviously do operate in a matrix, a background, that consists entirely of those remaining

elements of reality which we have called the exogenous factors. The business-cycle processes necessarily acquire many of their objective characteristics from this matrix. In the extreme case, correlation procedures might indicate that alterations in the major phenomena of objective reality—in such things as prices and production, in income levels, and the like—were associated almost entirely with the exogenous factors and hardly at all with the business cycle. If we were here concerned to explain the *totality* of economic reality as it exists at any time, we should therefore have to appraise the relative contributions of the two sets of factors to this total.

The question thus raised will not be answered in the present study, and indeed it is probable that with the information now available, no two students would arrive at the same answer. None of these changes in the exogenous factors or their working, however, impairs the validity of the hypothesis of self-generating business cycles set out in earlier pages, for that hypothesis does not pretend to explain the *whole* of reality. The exogenous factors do set the conditions and limits within which the business-cycle processes work, and help to determine the quantitative size of their various objective characteristics—their trends and amplitudes, the relative importance in each cycle of different types of activity and the like.[1] But the self-generating business-cycle processes themselves, which we have endeavored to explain, exist apart from and independently of changes in the magnitudes of their objective characteristics, and independently of changes in the exogenous factors. Even if all the exogenous factors actually remained constant, still changes in anticipations—in the attitudes people adopt toward the future development both of these factors and of

[1] Note that an influence also runs in the opposite direction. The short-run effects which the exogenous factors produce on economic activity are themselves conditioned, in many cases at least, by the current phase of the business cycle. Even large changes in actually applied techniques, for example, have little effect on general activity in an era of cyclical contraction.

all other economic conditions—would produce self-generating business cycles in individual-capitalistic societies.

The introduction of the exogenous factors also gives a fairly adequate, though non-systematic, way of accounting for the observed wide differences between one cycle and another, which appear even within a single country and even over relatively short spans of time. Indeed, the striking thing is not that there is so much diversity but that despite the wide changes in the importance of the several exogenous factors at work, there is so much actual similarity in the objective manifestations of the self-generating business-cycle processes.

In this discussion of the exogenous factors, and in the preceding analysis of the internal dynamics of business cycles themselves, nothing has been said in detail about the interactions between cyclical and other economic changes in one country and those in other countries. This is an admitted gap, but no attempt will be made to fill it here. That such international economic relations are of substantial and sometimes dominating importance for many countries is self-evident. Any one of several hypotheses can be utilized to "explain" the adjustment processes presumably involved. Too little is yet known about the actual facts, however, to permit very useful generalizations from these facts. Moreover, nothing in the evidence now available suggests that such generalizations, when and if arrived at, will materially alter the main pattern of the preceding analysis.

Chapter IX

THE RELATION BETWEEN SPENDING AND INCOME: THE VELOCITY OF MONEY

I

THE cyclical hypothesis presented in earlier chapters asserts that a net increase in the total volume of current investment and other spending will produce an increase in current income, other things equal, and conversely. The hypothesis says nothing, however, about *how great* the increase in income will be. The present and the next following chapters will be concerned with this latter and essentially quantitative question. It is both a question which is important logically and also one which, at times, takes on great practical significance, as when the central government is contemplating programs of spending to combat business depressions. It is the question to which the "multiplier" analysis, devised by R. F. Kahn, taken over by J. M. Keynes and in this country elaborated especially by J. M. Clark, is primarily addressed.

The question can be interpreted in either of two ways. On one interpretation the answer is obvious but is not especially significant. It is that any net increase in the total volume of current spending will produce at least one equal "primary" increase in individual income and will usually produce all or most of this increase quite rapidly. The money which is spent is either paid directly to individuals, say as wages, and thus increases income at once, or it is paid to business firms. In the latter case, the business firms in turn eventually pay out all the increase in their receipts to individuals as incomes, although a number of successive payments between firms (as from wholesalers to manufacturers)

may intervene before the last dollar is thus paid to individuals. The payment may also be indirect rather than direct, as in the case of undistributed dividends.

But this sense of the question is not the important one, nor is it the sense with which recent discussion has been chiefly concerned. The important question concerns the "secondary" effects of the initial increase in income. Under most conditions, the recipients of the increase do not merely hoard the additions to their incomes but in turn spend all or most of the additions, thus once more increasing incomes for other people in subsequent periods. When these other people then spend part or all of the increases in their own incomes, still further waves of income changes appear. Thus the effects of the original increase in spending become diffused through time and space, in a long and perhaps infinite series of income-spending cycles, and raise subsequent income as a whole to levels higher than would otherwise have prevailed.

The important sense of our original question is therefore the sense which poses this problem: How great are the aggregate changes in the volume of income *through time* which will be produced by a given act of additional spending, and what will be the pattern of these changes?

To solve this problem, as will be shown in what follows, it is really necessary to know only two things. The first is the *average* length of time which elapses between the receipt of a given block of income, the subsequent expenditure of whatever part of that block the recipient does *not* intend to hoard, and the reappearance of the sums thus spent in the incomes of this or other individuals at a later date. This average length of time, which we shall later define more carefully, may be called the *average income-circulation period*. The second necessary datum is the average size of the current additions to effective hoards[1] which are being made out of current income receipts, these additions being most conveniently measured for the moment as a fraction

[1] Including extinctions of the total money supply, as when bank loans are repaid.

of the income receipts themselves. Such additions to hoards are, of course, money which is withheld from any sort of spending on goods or services. An examination of how these two factors govern the relation between spending and subsequent income, under various conditions, will constitute the substance of the present chapter.

Information on the numerical size of the two factors can be obtained, directly or indirectly, from the numerical values of the circular or income velocity of money and its determinants, which will be examined in a moment. These values give definite evidence on the length of the average income-circulation period. They also provide a manageable apparatus for handling the relative size of additions to money hoards; for estimating these additions statistically; and for relating changes in hoards to changes in national income, in the general level of anticipations and in the phases of the business cycle. They thus furnish the key to the central problem here at issue—the relation between spending and subsequent income. We shall find that under certain conditions, a precise numerical answer can be given without qualification, but that under other conditions, such an answer can be obtained only with respect to specified periods of time.

The Keynesian "multiplier" analysis, on the other hand, does not start out with adequate information of either statistical or even conceptual kinds about either of the two factors just enumerated, and therefore fails to give adequate answers to the problem at which it is directed—except, as will be seen later, in one case. We shall therefore begin with an analysis of the circular velocity of money and its application to the income-spending problem, later translating the results obtained into terms of the "multiplier" analysis.

2

I have discussed the circular or income velocity of money at length in other studies, to which the reader may be referred,[1] and shall now offer only the briefest recapitulation.

[1] See the references given in Chap. IV, Sec. 2, above.

On the view presented in those studies, the aggegate stock of "circulating" money (which consists substantially of currency and demand deposits owned by non-bankers, excluding time deposits) can be thought of as divided at any moment into two quite different parts. One, the "active" part, is that money being currently utilized in the production and exchange of commodities and services. The other part is that currently held in idle balances, or "hoards." These hoards we define as any sums of money originally received as income or as business receipts which are withheld by the recipient, from expenditure on commodities or services, longer than what is for the recipient one "normal" maximum income-expenditure period or business-receipts-expenditure period. Hoards hence include individual and business contingency reserves, required minimum bank balances, currency or deposits held idle for speculative purposes, and the like; and also funds currently tied up in the "financial" circulation—in making payments for securities and other titles or claims not connected with the purchase of new investment goods and the like.[1] If we again designate the size of the idle balances or hoards as Ha in absolute terms, or as h in terms of their percentage size of the aggregate stock of circulating money M, the stock of "active" money alone can be written either as $(M - Ha)$, or as $M(1 - h)$.[2]

Now the circular or income velocity of money is, by definition, the average number of times per unit period that a unit of money enters into individual income (either explicitly, or implicitly as in the case of plowed-back business profits), is paid out again to dealers or producers of commodities or services, and is again paid out by them to individuals as

[1] See Chaps. IV, Sec. 2, and VI, Sec. 3, above.

[2] To avoid confusion with other symbols used in the present essay, I have found it necessary to change some of the symbolic designations used in my earlier papers. The absolute side of idle balances of hoards, formerly designated by B, is now Ha; their relative or percentage size, formerly b, is now h; the circular velocity of active money alone, formerly d, is now v; that of the aggregate stock of circulating money, formerly C, will later be designated by v'; and national money income, formerly NI, is now Y. I can only apologize to readers of the earlier papers for not having foreseen the present contingencies.

income. Clearly it is only "active" money which can enter these circles of income payments, since hoards are that part of the aggregate money stock which is *not* being used in the production or exchange of commodities or services. Furthermore, and again by definition, the national money income Y must be equal, in any period, to the stock of "active" money multiplied by its average circular velocity in that period. If we let the average circular velocity of the stock of "active" money be v, then in any period,

$$(M - Ha)v = Y, \tag{9.1}$$

or

$$M(1 - h)v = Y. \tag{9.2}$$

The period required for an average unit of active money to complete the circle of payments from income back to income, or $1/v$, we may call the average circulation period of active money; it is identical with the circulation period of income itself, already referred to. This period will presently play an important part in the analysis of the income-spending relation.

The reality and validity of the two principal concepts just developed, however—the average circular velocity of active money and its reciprocal, the average circulation period of this active money—are not self-evident to all students. Before we turn to the income-spending problem, some elaboration of their meaning will therefore be helpful.

It is sometimes pointed out that certain of the dollars received by individuals as income and then paid out by them to retailers, for example, are paid out again fairly promptly by the retailers as wages and the like, and hence re-enter individual income within a limited period of time; but that most of the dollars thus paid to retailers are in turn paid out by the retailers to other business firms. It is further pointed out that although each of these other firms pays out a part of its own business receipts as individual incomes, the larger part of the outpayments which each makes goes to still

other firms, not to individuals. Therefore, it is argued, the concepts of an *average* circulation period of active money and an *average* circular velocity can have no unequivocal logical significance. Still less can they be assigned intelligible numerical values. The larger part of each block of dollars paid out by individuals for consumers' goods, for example, gets caught up in the flow of inter-firm payments; the path which will be followed by any one such dollar before it is returned to individuals as income is unpredictable, and may be either relatively short or indefinitely long; it is actually impossible to trace the path of any one such dollar; and the so-called average circulation period and average circular velocity, even of active money alone, are therefore concepts lacking any definite counterparts in the real world. Numerical values can be assigned to them only as a result of a rather meaningless process of statistical averaging.

There is truth in all of these propositions except the last two. The indicated conclusions do not follow.

To show that they do not, let us imagine a society in which the aggregate stock of circulating money and the absolute size of hoards remain permanently constant, and in which no individual or firm increases or decreases the size of his or its individual hoards. Then the size of the stock of active money is also constant. Suppose further that every business firm always pays out a fraction f of its current business receipts to other firms and pays only a fraction $(1 - f)$ to individuals as income. If we give f a value of 0.80, we shall probably not be too far away from the average situation in industrial and commercial firms,[1] but the actual value selected is immaterial. If an individual now pays $100 to a retailer for a consumption good, the retailer will presently pay out $20 of his

[1] A compilation of the United States census figures biennially for 1919–1937, made by the National Industrial Conference Board ("Road Maps of Industry," Nov. 24, 1939), shows the sum of payments in manufacturing industries alone for wages, salaries and profits to have averaged 36 per cent of sales. Interest, rent and taxes are not shown separately. The sum of inter-firm payments in these industries, however, can hardly have exceeded 60 per cent. In commercial enterprises, on the other hand, the sum of inter-firm payments must average very much higher.

receipts to individuals as wages, salaries, profits, and the like, but will pay $80 to other firms. The latter in turn go through a similar set of operations, paying altogether $16 to individuals as income and $64 to still other firms; and so on indefinitely. Of that part of the original $100 which each firm successively receives, each pays a fraction $(1 - f)$ of these receipts to individuals as income. As the chain of inter-firm payments gets longer, however, the *absolute* size of the income payments made by each successive firm in the chain, out of that part of the original $100 which comes to it, gets smaller and smaller.

Evidently these income payments constitute an infinite diminishing progression, since $(1 - f)$ lies between zero and 1. If the units of money were infinitely divisible, it would be theoretically possible for an infinitely small fraction of the original $100 to remain in the stream of inter-firm payments through perpetuity. But this infinite progression has a finite sum. At the limit, *all* of the original $100 spent will be paid back to individuals as income. If Y_0 be the original $100 spent and later returned to individuals as income, then in this case (where, by hypothesis, none of the money is used to increase hoards), the expression for the sum of the income payment to infinity is

$$\Sigma(Y_0[1 - f + (1 - f)f + (1 - f)f^2 + \cdots]) = Y_0. \quad (9.3)$$

Each successive term in this expression represents what happens, with respect to income payments, at each successive stage in the flow of inter-firm payments. The time which elapses between one such stage and the next is the time elapsing between the receipt of a block of money by one firm [which then pays out a fraction $(1 - f)$ to individuals as income, and a fraction f to other firms] and the receipt of the fraction f by the next firm in the sequence. On the average, since much the largest part of the total volume of money payments is payments between firms, the size of this time interval must be fairly close to the average interval between money payments for the country as a whole—that is, to the

reciprocal of the Fisher or exchange velocity of money. If "financial" transactions be excluded, it must hence be on the order (roughly) of 2 weeks in length.

Now these successive payments, made by firms to individuals and to other firms, are not all made at the same instant. A substantial interval—perhaps several days or weeks—usually elapses between the time when a firm takes in business receipts and the time when it pays the money out to others. Nor do individuals usually spend all of each block of income the moment it is received. Let us consider, therefore, a given block of money income which an individual has previously received and is now about to spend, and which consists of a certain number of units of money. Then it is entirely legitimate to conceive of the *average* length of time which will be required by the *average* unit of money in this block to pass from the possession of the given individual into individual spending, through some part of the inter-firm payment stream, and back to the same or other individuals as income. Certain specific units of money complete the payment circle rapidly, being quickly paid out again as individual income by, say, retailers. Other units complete it very slowly, passing through many inter-firm payments first. But since the income-payment progression given above has a finite sum, at the limit *all* of the units in this block of money, units which were first paid out by the original individual, must eventually return to individuals as income. The concept of an *average* length of time, required by the *average* unit in this block to complete the payment circle, hence has logical meaning.

This average length of time is the time required for *half* of the units of the original block of money Y_0 to complete the payment circle at least once, and thus to return at least once to individuals as income; for it can be shown that in this period, the sum of the primary and the successive secondary increments to subsequent income traceable to the original spending Y_0 will precisely equal the amount of the original spending itself. That is, the effect on income will be the

same as though the whole block of money originally spent had entered income once, and only once, in this period. Moreover, the same thing will be true of all subsequent periods of equal length, other things equal. That is, in each such subsequent equal period, the sum of the blocks of subsequent income traceable to the original spending Y_0 will again precisely equal the amount of the original spending. It therefore follows that this period itself can legitimately be described as the *average circulation period* of money income and of the active money which embodies the income, so far as concerns this particular block of income and of money. Its reciprocal is hence the *average circular velocity* of this block of income and of money, or v. The proof of these crucial propositions is somewhat complex, however, and may be assigned to a note at the end of this chapter.

A further corollary should be stressed, which will prove important later in appraising government policies. It is the fact that the time required for a *change* in the volume of current spending to produce its full effects on income is likewise the circulation period of *active* money, or $1/v$. That is, by the end of the first such circulation period after the change in spending has taken place, the full resulting change will appear in income—other things equal, of course, and in particular on the assumption, as before, that hoards remain constant. It will be shown presently that this period is probably between 3 and 4 months in length. If changes in hoarding take place, however, the effect on income will be smaller, and the time required for these effects to appear in full becomes longer; it becomes the average circulation period of the aggregate stock of *circulating* money, discussed below, or $1/v'$.

3

It is true that if the average circular velocity of active money had one numerical value for one block of active money which was spent in one way, and quite different values for other blocks spent in other ways, the average circular velocity

of the stock of active money as a whole would presumably vary widely, and in a manner that would be essentially fortuitous and non-meaningful. In that event, the concept of average velocity itself would undoubtedly lack any particular significance in economic analysis, except as a curiosity. Two sets of considerations, however, indicate that the average circular velocity of active money is one of the stablest magnitudes in the economic universe. One set of considerations is based on the nature of the factors which determine this circular velocity. The other is based on inferences suggested by the available statistical material.

First, with respect to the factors which themselves determine the average circular velocity of active money, it is evident that the numerical value of this velocity is simply, as previously pointed out, the reciprocal of the average length of time required by the average unit of money to pass from individual incomes into the hands of business firms, and back to individuals as income. This average length of time is, in turn, governed by the average number of times the average unit of money changes hands in completing one such income circle and by the average length of time it remains in the hands of each recipient—that is, by the size of the average payment interval. In other words, the length of the average circulation period of active money (the size of $1/v$) is governed proximately by people's habits in the use of money, and more broadly by the general character and structure of business organization. These habits and structures presumably change rather slowly, if at all. Wages are usually paid daily or weekly; salaries weekly, bi-weekly or monthly; dividends and interest quarterly or semiannually, and so on; and firms which have once set up a schedule of such payments usually do not change the schedule frequently. If a business man increases the scale of his operations, he may hire more laborers and may even pay them higher wages, but he does not pay them every 5 days instead of every 7. It is true that the average time intervals between successive payments which one firm makes to others may

vary substantially, as when business activity increases or decreases, but these variations are best regarded as part of the transitional adjustment to a change in activity itself. There is no obvious reason why the time intervals between inter-firm payments should vary much at a given *constant* level of activity. At any one level of general activity, therefore, the principal regulator of the velocity of money through the payment circle that runs from individual income to dealers and producers, and back to individual income, is undoubtedly the average timing of income payments to individuals themselves and the average timing of the individual's own expenditure of given blocks of income. These *average* timings presumably change only gradually.[1]

There are also many cases in which the maximum attainable circular velocity of active money is inexorably fixed by essentially technological conditions. Most branches of American agriculture, for example, can market only one crop of a given sort in each calendar year, so that here money can be started on its circular income path only once a year. For this part of the economy, the maximum attainable annual circular velocity of money is hence 1. It therefore seems probable that the national average value of v is lower when agricultural production is large relative to industrial and service-industry production. It also seems probable that the national average value of v is somewhat lower when investment is large relative to consumption, because for technical reasons the production of many types of heavy investment goods takes a great deal of time (*e.g.*, power plants, ships). In the absence of definite evidence, however, we can only note these probable qualifications.

[1] See especially my article in the *Quarterly Journal of Economics*, November, 1937, and that by H. S. Ellis in the same journal for May, 1938.

The subsequent argument would not be altered, however, except in matters of superficial form, if we assumed that v was relatively variable. For if it does vary, it presumably varies chiefly with the timing of inter-firm payments, which speed up in good times and slow down in bad. The value of v must therefore vary, if at all, directly with the general level of income and hence (with a lag) with anticipations, as is consistent with the subsequent argument.

Second, indirect statistical evidence is provided by the data on the average circular velocity of *circulating* money. This category of circulating money, it will be remembered, consists roughly of the sum of demand deposits and currency owned by non-bankers. It includes both "active" money and hoards, as previously defined. Let the average circular velocity of the aggregate stock of circulating money be v'. This velocity is then a weighted average of the circular velocity of active money, v, and of that of hoards. The circular velocity of hoards is obviously zero, since hoards do not enter into the receipt or spending of current income on any ordinary definition of the term "income."[1] This weighted-average circular velocity of the aggregate stock of circulating money clearly has no great significance in itself, but it does possess the conspicuous merit of permitting a simple numerical substitution to be made, as will appear in a moment. If we use this average velocity, then in place of equations (9.1) and (9.2) we can write, for any period,

$$Mv' = Y. \tag{9.4}$$

Therefore, from equation (9.2),

$$v' = (1 - h)v. \tag{9.5}$$

Since approximate numerical values can be assigned to M and Y for recent years, equation (9.4) permits the determination of approximate average values for v'. From 1899 to 1929, this value fluctuated rather narrowly around an average of 3.00 per year, with an extreme range from 2.72 to 3.35; two-thirds of the values fell between 2.80 and 3.13. In this period, the value of v' varied substantially with business activity. It then fell heavily in 1930–1932, but since 1933 has again been fairly stable, and has fluctuated rather narrowly around an average value of 2.19. This stability in its numerical values over periods of some length, and especially its

[1] Except so far as concerns that part of the financial circulation used to realize capital gains and losses, the definition adopted by the American income-tax authorities!

virtually horizontal trend from 1899 to 1929, greatly increases the economic significance of the general concept of average circular velocity itself. As will be shown in a moment, this stability is presumably not a mere statistical accident. The principal series involved are presented graphically on the accompanying Charts I and II, and a table containing the data and estimates is given in Appendix II, below.[1]

Now it is reasonable to think that the *relative* size of money hoards h falls in periods when business activity is increasing and rises when it is declining. In times of expansion the attractiveness of holding assets in the form of money hoards diminishes, for individuals and business firms alike. Since v' necessarily moves inversely with h, other things equal, it can therefore be argued that all or most of the fluctuations in v' arise from opposite fluctuations in h, and hence that v, the average circular velocity of active money alone, is usually highly stable relative to periods of perhaps several years at a time. Certainly there is no reason to think that v moves *inversely* with business activity. Since there are also good a priori grounds for expecting h to move inversely with activity, as just remarked, and hence for expecting v' to move directly with activity, the actual statistical behavior of v', which usually shows rather narrow cyclical fluctuations around a nearly horizontal trend, hence also lends strong, though indirect, support to the belief that v is usually highly stable over periods of some length.[2]

It is true that the sharp fall of v' in 1930–1932, to what appears to be an enduringly lower level, may reflect in part some fall in v. But the largest part of the fall in v' was presumably due to the great increase in the relative size of hoards which the depression itself and the subsequent continued uncertainty induced. Some part of the fall in v'

[1] Two values are shown for 1929 in most cases, because of a shift in the income series used (see Appendix II).

[2] Also see J. B. Williams, *The Theory of Investment Value* (1938), pp. 50–54.

The fluctuations of v' were usually closely and positively correlated with business-cycle fluctuations in 1899–1939, often with a suggestion of lag. On 1901–1907, see a footnote in the next section.

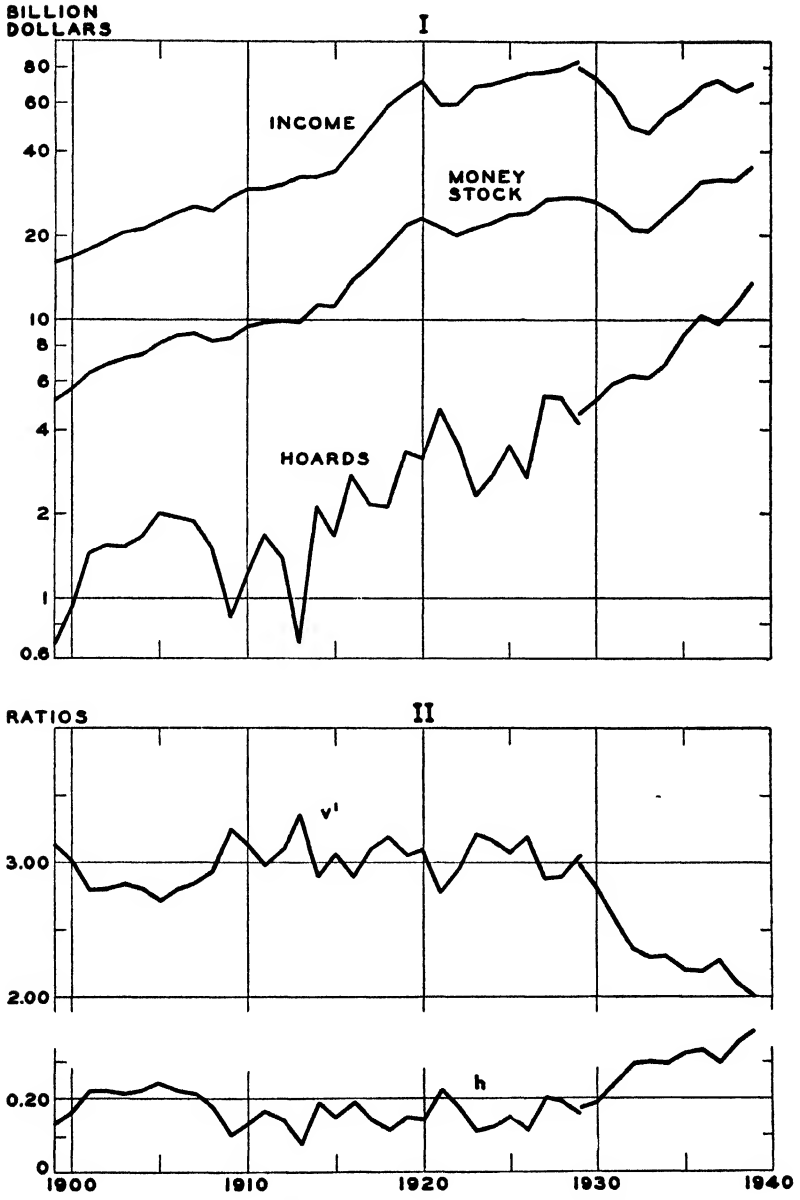

CHART I.—National income, money stock, and hoards: annually, 1899–1939.
CHART II.—The values of v' and h: annually, 1899–1939.

may also be statistical rather than real, in the sense that it may be due in part to changes in the method of reporting the deposit data.[1]

Estimates of the numerical values of v, calculated on two different bases, are also given in Appendix II, below. If we assume that even in times of great business activity, money hoards (which are defined to include sums currently tied up in the financial circulation) never fall below 10 per cent of the aggregate stock of circulating money, and assume v to remain fairly constant for some years at a time, the value of v in this country in the period 1899–1929 was around 3.60 per year. The depression doubtless produced some change in payment habits, however, especially between business firms; payments were persistently made less promptly. Suppose that by the end of the depression, v had therefore dropped about 10 per cent relative to its average in the period 1899–1929, say to 3.24 per year. Then on this assumption the relative size of hoards h reached a maximum value in 1939, at 38 per cent. On the other hand, if we suppose the minimum value of h in the period 1899-1929 to have been 15 per cent (which seems improbably high), the value of v was around 3.80 in 1899–1929 and around 3.42 by 1933, and the value of h in 1939 was 41 per cent.

Estimated values for h computed on the first set of assumptions—that the minimum value of h was 10 per cent —are shown on Chart II. It is important to note that though

[1] Before 1933, and especially before 1930, many banks permitted a substantial though unknown proportion of their time deposits to be checked against, or at least to be converted into demand deposits (which were then at once checked against) without notice. In consequence, the category of demand deposits as reported was really "too small," and the velocity figures computed from them too high. In recent years this practice has been largely stopped. The rise in the proportion of reported demand deposits to time deposits, however, which began in 1933, has not been great enough to make this shift in banking practice a plausible explanation for more than a part of the apparently enduring drop in the trend value of v' since 1932.

A part of this drop may also be due to the inclusion of U. S. government deposits in our deposit estimates. These U. S. deposits have grown rapidly since 1932 and do not behave in all respects like private deposits.

the fluctuations of h were large in relative terms, in 1899–1929 the central trend was nearly horizontal and the average value of h hence substantially constant with respect to periods of several years at a time. In Chap. X, below, we shall use h as a measure of the average desire to hoard.

The average length of the circulation period of active money, or $1/v$, is 3.33 months if v is taken at 3.60 per year, 3.15 months if at 3.80. This average length of circulation period is presumably longer than the figure typical in most manufacturing and commerce. But in most branches of agriculture, as previously remarked, the period must necessarily be 12 months.[1] The average for the country as a whole is therefore substantially longer than for commerce, or even for most manufacturing, if these latter activities are taken separately.

Two further comments may be offered. First, no attempt has been made to this point to distinguish between money spent on investment goods and money spent on consumption goods. It is quite probable, however, that the average dollar spent on investment goods takes substantially more time to make its first reappearance in individual income than the average dollar spent on consumption goods. This is true both because the actual fabrication process is likely to be longer and because in many cases *ad hoc* blueprints and specifications have to be drawn, whereas the production of consumption goods is more nearly standardized at any time. These considerations may also be important for government policy. Because of them, a government anxious to produce a rapid increase in individual incomes by deficit spending, for example, may prefer one channel of spending to the other. But after the first wave of effects has passed—after the first circle of income payments to individuals made with the new money has been completed—it presumably makes little difference through what channel the additional

[1] For a penetrating and most helpful analysis of the various kinds of time periods which are relevant to monetary analysis, see F. Machlup, "Period Analysis and Multiplier Theory," *Quarterly Journal of Economics*, November, 1939.

spending was originally made. The dollars themselves are not labeled; after they have completed the first income circle, they simply constitute potential increments to subsequent spending and to subsequent income, like any other dollars. After the first circle, the current national *average* velocity of circulation of circulating money, v', will apply to the new money as well as to the old, other things equal.

Second, no attempt has been made above to distinguish between blocks of income going to groups possessing one range of income and those going to groups with other ranges. As suggested at an earlier point, however,[1] in the later phases of cyclical expansion individuals in the moderate- and "high-" income groups and many business firms presumably hoard a growing part of the current *increases* in their incomes. This hoarding must cause a decline in *average* circular velocity in these cycle phases, other things equal. Again, if an increase in current income is financed by the artificial creation of additional money in a depression, when anticipations are low, it is probable that the low-income groups will spend virtually all of any increases in their incomes on consumption[2] but that the moderate and high groups will hoard part or nearly all of theirs. The latter considerations suggest that the recent controversy between those who favor relief or Works Progress Administration expenditures and those who favor public-works expenditures involves questions of real consequence. Two points are important in this connection. First, it presumably takes longer to get a dollar of public-works expenditures through to individuals as income, since more elaborate plans are needed and since much of the dollar must first go to business firms selling equipment and other supplies. This is the point discussed in the preceding paragraph. Second, these business firms themselves pay out

[1] Chap. VIII, Sec. 3.

[2] Except so far as they are compelled to repay loans—thus increasing the money receipts of other groups of individuals and firms that, in periods of depression, are likely to hoard much of the receipts rather than to respend them on new goods or services.

part of their receipts to individuals as dividends, interest payments and the like; and a smaller proportion of any current increases in such dividend and interest payments is likely to be respent on new goods and services when anticipations are low than in the case of increases in incomes that go initially to wage receivers and the like. But this again applies only to the initial-impact effects. For those parts of the initial increases in income which *are* respent, the subsequent secondary effects on income will presumably be much the same, on the average, in either case.

That is, both the differentiation between new spending on investment goods and new spending on consumption goods, and that between new spending which initially increases the incomes of high-income groups and new spending which initially increases the incomes of low-income groups, are chiefly important only with respect to the speed and size of the *first* wave of effects on income and spending. The subsequent secondary effects produced by such part of the initial increase in income as *is* respent are much the same in each case. Moreover, the relatively high stability of the circular velocity of circulating money in the past (except in 1930–1932!) suggests that at most times, even the differentiation with respect to initial-impact effects has not been quantitatively very important. That is, although it is theoretically possible for *all* of any increase in current spending (for example, by the government) to drain quickly into hoards, the statistical data do not indicate that where the initial change in such spending was substantial, a proportion of the increase was usually hoarded which was greatly different from the prevailing *average* ratio between money hoards and money income, except in 1929–1932. This proposition will be examined again in a moment, however. If the differentiation with respect to initial-impact effects is nevertheless significant in some sense (and the available statistics do not cast much light on this), it is because relatively small changes in current spending and hoarding act

as trigger mechanisms setting off large changes in general anticipations and in income.[1]

4

The preceding section was concerned with the ratio between the absolute volume of the national money income and the average size of the money stock in each period—that is, with the circular or income velocity of money and its components. A number of extremely interesting facts are also revealed by a study of the relations between changes in the volume of income and associated changes in the money stock, from one period to the next.

These facts are summarized on the accompanying Chart III, which presents annual figures for 1899–1939 (data for shorter unit time periods are not now obtainable). The chart is a scatter diagram, on which each point plotted shows the value of the national income and the money stock in the year indicated. The points are connected in their chronological order, and three lines of regression (of income on money) have been fitted for the three sharply different periods into which the data obviously fall. These periods are 1899–1929, 1929–1933 and 1933–1939. Two values are given for 1929, because of a shift in the composition of the income series used (see Appendix II, below).

The data for the first period, 1899–1929, reveal an extraordinarily stable relation between changes in income and changes in money stock during this period. It may be doubted if any other important and directly measurable economic magnitude, except the average circular velocity of money itself, has shown equal stability over as long a period as 30 years, at least in modern times. The deviations from the average value of this relation are comparatively small and, in comparative terms, are little if any larger in the 1920's than they were in the early 1900's. It is especially striking that the violent economic upheavals of the first World War and its aftermath had no conspicuous effect on

[1] As shown in Chap. VIII, Secs. 3 and 4.

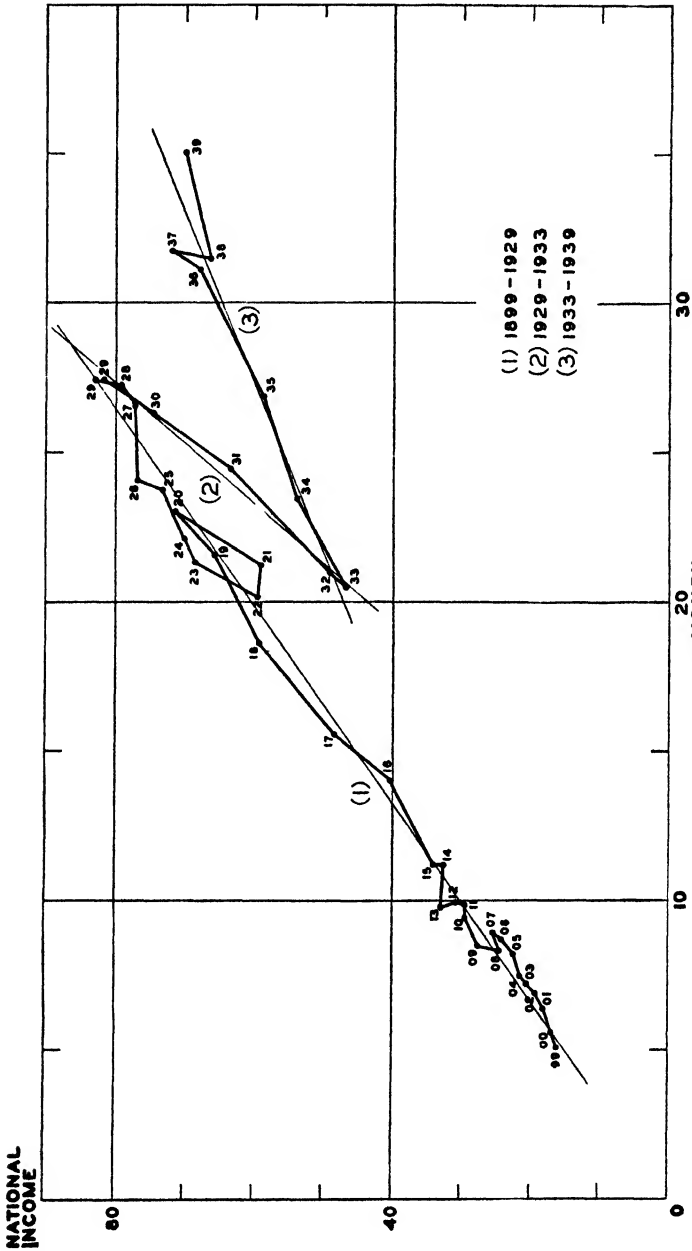

CHART III.—Scatter diagram: national income and money stock: annually, 1899–1939 (in billion dollars).

the relation—as was also true of the circular-velocity measure (see Chart II, above). The regression equation of income Y on money M for this period is

$$Y = -0.17 + 3.03M;$$

the correlation coefficient is 0.96; and the standard error of Y is 2.52; this last is 5.76 per cent of the mean value of Y.[1] The regression curve passes virtually through the origin, as it should; with no money stock there should be no national money income, and conversely.

This regression equation means that on the average, a dollar of change in the money stock in this period was accompanied by a change in income in the same direction of $3.03. Although there are almost no cases in which the actual ratio between the two sets of changes from one year to the next was precisely 3.03, there is also no case in which the average of these changes *through* any period of 3 or 4 years differed importantly from 3.03. That is, in 1899–1929 the ratio 3.03 was also substantially the average ratio through any one business-cycle period. Moreover, as must be the case with a linear regression curve passing through the origin, this ratio, between the average increment in the volume of income per unit time period and the average increment to the money stock outstanding in the same unit period, is substantially equal to the ratio between the absolute *sums* of all the increments over a number of such periods. That is, the average relation and the incremental or marginal relation between income and money stock were here virtually identical. Since the ratio between the absolute sums is also, by definition, the average circular velocity of money, the average incremental ratio was therefore virtually identical here with the circular-velocity figure, which in 1899–1929 had an average value per year of 3.00.

What this last virtual identity means, in effect, is that in 1899–1929, people used *increments* to the money stock, on the average, in much the same way that they used the

[1] Or, reversing the dependence, $M = 0.06 + 0.33Y$.

previously existing stock of money, increasing the absolute size of their money hoards and the current money volume of their spending on new goods and services in the same proportions as those previously prevailing. After 1929, as will be shown in a moment, and again after 1933, this ceased to be true, at least for substantial intervals. It will also be argued presently, however, that a divergence between the numerical values of the average and the incremental or marginal relations between national money income and money stock reflects a "non-stable" situation, and that the divergence always tends to disappear. The development of a marginal relation different from the current average relation is simply evidence of the fact that the average relation is itself changing, and indeed constitutes the proximate mechanism by which the average relation *is* changed.[1]

Attention should also be called to the interesting behavior of the data from 1920 to 1924–1925. This behavior gives an almost perfect empirical illustration of the "irreversible" type of relation discussed, with reference to another field of problems, in Chap. III, Sec. 2, and illustrated graphically by Diagram IV therein. There are other cases in the period

[1] It should be pointed out that these numerical measures of the income-money stock relations are affected by the size of the unit time period selected. If 1 month were used as the unit time period instead of 1 year, then in 1899–1929 the value of the marginal relation would have been 3.03/12, or roughly 0.25. But the value of the average relation would be lower in equivalent degree (3.00/12 equals 0.25), and the two would hence remain substantially identical. If a 2-year period were used as the base, they would become 6.06 and 6.00, respectively: that is, a $1 increase in money stock occurring at the beginning of the period would entail, other things equal, an increase in national money income for the period as a whole of $6.06, above the levels of income which would otherwise have prevailed.

The virtual linearity of the marginal relation in 1899–1929 also shows that in this period either (1) demand deposits as reported really were on demand and contained no large volume of what were really time deposits, and conversely; or (2) any misclassification of deposits was fairly constant in relative terms, which is less probable. The period 1901–1907, however, seems to be an exception to these conclusions. Here the income-money ratio was persistently below the 1899–1929 average. This suggests that in 1901–1907, demand deposits as reported were "too large": that is, that a part of what were really time deposits were reported as demand deposits. The data and charts for v' and h, discussed above, show the same thing in other forms.

1899–1929 in which the chronological income-money curve reversed its direction, but none in which it crossed itself. In 1920–1925, national money income at first fell relatively *more* rapidly than money stock when both were declining, but then fell *less* rapidly; and at first *rose* relatively more rapidly when both were increasing, and thereafter rose less rapidly. Or, put the other way around, the response of the money stock to general changes was relatively sluggish at the outset, but later in the history of the change became relatively rapid and even "excessive." This last was true in a number of other sub-periods in 1899–1929, though not in all.

The data for the second period, 1929–1933, show a quite different pattern. Here income and money stock were both dropping sharply, but income fell relatively much more rapidly. The linear regression equation is

$$Y = -56.16 + 4.99M,$$

with a correlation coefficient of 0.99 and a standard error of 1.23 (which is 1.94 per cent of the mean of Y). Inspection suggests, however, that a parabola which is concave upward would give a better fit; and indeed if the regression curve is to pass through the origin, as is logically necessary, such a parabola (the simplest curve here available) must be used. It is evident that a profound change from the pattern of relations which had prevailed in 1899–1929 took place after 1929.

In 1933, still another great change began. From 1933 to 1939, income and money stock both increased steadily except in one year (1938), but with a still different average relation. Here the linear regression equation is

$$Y = 12.12 + 1.75M,$$

with a correlation coefficient of 0.96 and a standard error of 2.35 (which is 3.78 per cent of the mean of Y). Again, however, a parabola would give a better and more logical fit—this time a parabola which is concave *downward.*

Finally, if we take the whole array for 1899–1939, a parabola which is concave downward is again the least

implausible fitting curve. The equation for this curve, which is not shown on Chart III, is

$$Y = -30.29 + 7.35M - 0.14M^2.$$

Since this curve does not pass through the origin, it can be only an approximation and, in any event, has little meaning; it attempts to combine three quite different sets of facts in a single expression. This curve, incidentally, reaches a maximum in the vicinity of 71 for Y and then turns sharply downward.

The period after 1929 was thus profoundly unlike the period before that date. Some inferences as to the causes and significance of this shift will be presented at a later point[1] but would be out of place here.

The data just presented have an extremely important bearing on the central problem with which the present and the next two chapters are concerned—the relation between changes in the volume of current spending and consequent changes in national income. In most cases, an increase in money stock, under the definition of "money" that we have previously set up, *is* an equal initial increase in national spending and hence in national money income. The great majority of such increases are effected to buy new goods and services and hence contribute to income—as in the case of most borrowing from banks. The chief exceptions arise when people sell securities to the banks and then hoard the proceeds, which is not usually an important operation. Similarly, most decreases in money stock entail an equal decrease in purchases of new goods and services and hence in national money income, as when bank loans are repaid or when current income is used to buy securities from banks. The average ratio between year-to-year changes in national money income and the contemporary year-to-year changes in the money stock can therefore be interpreted as a measure of the effect which this particular form of "original" change in spending—that is, a change in spending which is effected

[1] Chap. XIII, Sec. 7.

through or accompanied by a change in money stock—will produce upon the total volume of national money income in the course of the next year. In 1899–1929, on the average, an "original" increase in this type in spending was accompanied by a total increase in national money income for the subsequent year which was 3.03 times as large.[1] This is evidently an extremely important conclusion.

Two comments must be made on it, however. First, not all "original" changes in spending necessarily arise from or entail parallel changes in the money stock. They may entail merely changes in the absolute size of money hoards, or may arise from changes in the circular velocity of "active" money. In 1899–1929, however, these alternatives were not very important on the average. If they had been important, the array of points plotted on Chart III, above, would not suggest a straight-line average relation, and the linear regression curve would not give a good fit. Second, precisely because this average relation *is* linear and can be summarized in a curve passing virtually through the origin, the *average* relation between income and money stock was nearly identical, in 1899–1929, with the incremental or *marginal* relation. That is, if an "original" change in money stock in 1899–1929 is multiplied by the then-current average circular velocity of money, the result is the amount of the increase in national money income which actually accompanied this increase in money stock, on the average.

In the first part of the argument of the next chapter, we shall assume that this virtual identity of the average and the incremental or marginal relations between national money income and money stock does, in fact, prevail and is "normal." Indeed, in the absence of large structural changes in money-payment and money-using habits, there is no general reason why it should not prevail. In recent years, however, powerful forces have been at work which have caused the

[1] Or, conversely, a given change in total income for the year was accompanied by an average change in money stock which was 0.33 times as large. The data examined above cast no light on the direction of the "causation" involved.

average and the incremental or marginal relations to diverge markedly. Since 1929, the marginal relation has been lower than the average relation with respect to increases in income, higher with respect to decreases. We shall later characterize this striking change as an evidence of increased "marginal pessimism." In 1929–1933, as already shown, the average relation was 2.61, the incremental relation 4.99; in 1933–1939, the average relation was 2.19 and on the whole was declining, whereas the incremental or marginal relation was only 1.75. In the proximate sense, these divergences arise from a persistent growth in the *relative* size of money hoards (the term h): that is, from a persistent decline in the general level of anticipations. Presumably the two will gradually draw together again, unless a series of further large structural changes continue to occur. As long as the divergence persists, however, the average circular velocity of money alone will not be an accurate guide to the relation between *changes* in income and changes in money stock. This question will be examined again later.[1]

Note on the Average Circulation Period of Money and Income.[2] Assume that the intervals elapsing between the receipt of given payments by firms and the complete expenditure of these sums by the same firms, as payments to other firms or to individuals as income, are of equal length throughout the society. Let r be the number of these payment intervals which elapse between the time when an original block of money Y_0 is first spent and the time when *half* of the units in this block of money have completed the payment circle at least once, thus returning at least once to individuals as income. (It is again assumed that there are no changes in hoards or in money stock.) Then for the period r, the sum of these successive "primary" increments to income, produced by the entry into income for the first time of the more rapidly circulating half of the units of the originally spent block of money Y_0, is as follows [there are r terms in the sum; the first "primary" increment is $Y_0(1-f)$, the second is $Y_0(1-f)f$, and so on; and the exponent of the last term is hence $(r-1)$]:

$$Y_0[1-f+(1-f)f+\cdots+(1-f)f^{r-1}]=\frac{Y_0}{2}. \qquad (9.6)$$

[1] See especially Chaps. X, Secs. 3 and 4; XII, Secs. 5 and 6; XIII, Sec. 7; and XIV, Sec. 6; also Appendix III.

[2] See the end of Sec. 2, above.

But in this same total period of r payment intervals, most of these "primary" increments of income will be spent again, and will hence produce further "secondary" increments to income before the expiration of the period r. Assume that the time elapsing between the receipt of a block of income by individuals and the complete expenditure of this block of income is the same as the payment interval for firms. Then the sum of the "secondary" increments to income produced by the spending of the *first* "primary" increment, $Y_0(1-f)$, to the end of the period r, will contain one less term than the sum of the "primary" increments [equation (9.6)] to the end of the same period r; this *first* "primary" increment has one less payment interval in which to produce "secondary" increments to income. The exponent of the last term is hence $(r-2)$. This sum of the "secondary" increments to income produced by the respending of the first "primary" increment, to the end of the period r, is then

$$Y_0(1-f)[1-f+(1-f)f+\cdots+(1-f)f^{r-2}]. \tag{9.7}$$

The sum of the "secondary" increments to income produced by the respending of the *second* "primary" increment, $Y_0(1-f)f$, to the end of the period r, is

$$Y_0(1-f)f[1-f+(1-f)f+\cdots+(1-f)f^{r-3}]. \tag{9.8}$$

The sum of the "secondary" increments produced by the respending of the *third* "primary" increment, $Y_0(1-f)f^2$, to the end of the period r, is

$$Y_0(1-f)f^2[1-f+(1-f)f+\cdots+(1-f)f^{r-4}]; \tag{9.9}$$

and so on through the "primary" increment $Y_0(1-f)f^{r-1}$. By the end of the period r, this last increment will be received but will not have time to be spent; it hence gives rise to no "secondary" increment in the period r.

Finally, the sum of all these "secondary" increments to income produced by the respending of the successive "primary" increments, to the end of the period r, is:

$$Y_0(1-f)(1+f+f^2+\cdots+f^{r-1}). \tag{9.10}$$

But this expression is evidently equal to the (unfactored) expression (9.6), above, for $Y_0/2$. In other words, the sum of the "secondary" increments in this period r is likewise half of Y_0. This means that in the period r which is required for only *half* of the money originally spent to enter income once—for the first time—the *total* increment to income is equal to the amount of the original spending itself, or Y_0. This is true, because in this period r, income is increased both by the receipt of the "primary" increments and by the effects of the respending of most of these latter increments; and the two sets of increments are of equal total size.

In the next period of equal length, r, the same units of money, as they are spent and respent, will make a smaller total contribution to income, because they are no longer spent in a single lump sum at the start of the period. But income will now also be augmented somewhat by contributions from the *second* half of the units of money originally spent, none of which entered income even once in the first period. For the period as a whole, the total increment to income traceable to the original spending will again be Y_0; this we need not demonstrate algebraically. So also for subsequent periods of the same length r; in them the "primary" increments become less and less important, the "secondary" increments more and more important, in their respective contributions to the total income of the period. Note that the "secondary" increments as a whole constitute a set of $(r - 1)$ diminishing progressions in the first period r; $(2r - 2)$ in the second; and so on.

It may be pointed out that if the payment intervals are *not* of equal length throughout the society, contrary to the assumption made above, the individual units of money should be weighted, in calculating the period r, inversely with the lengths of the payment intervals they chance to encounter in their flow. But in the present state of knowledge this must be largely a counsel of perfection.

In the case of purchases of consumers' services (such as those rendered by doctors, domestics, and so on), the seller can be regarded as a "firm" who then pays himself income. As the proportion of such purchases in total individual outlays increases, the chronological time represented by the period r will fall: at the limit, to two payment intervals.

The following proposition is also relevant and helps clarify the "real" meaning of the preceding algebraic expressions. Define a "period" (as we have done) as the average circulation period of active money alone, and assume it constant; assume the stock of *active* money itself to remain constant also; and define "spending" as the amount spent per period. Then *in* any period, the sum of all the increments to income produced by an infinite series of equal previous spendings by individuals is the same as the sum *through* time, to infinity, of the increments produced by any one spending alone. In the present case, the spending per period and both the vertical and the horizontal or cumulative sums are all equal to Y_0.

In another study (*Journal of Political Economy*, June, 1937), I described the flow of money through the circle of income payments not in terms of infinite diminishing progressions but in terms of a limited number of payment stages, in the last of which all business receipts were paid out as income. For the purposes in view in that paper, especially the study of short-run lags, this simplified procedure had definite advantages. It yielded results identical on matters of major import, however, with those obtained from the more realistic procedure outlined above.

Chapter X

THE INCOME-SPENDING RELATION AND ANTICIPATIONS

I

IT would perhaps be possible to stop our inquiry at this point, and to say that we now have in hand all the elements required to find out how great an increase in national money income will be produced by a given increase in the total volume of current spending. Indeed, if we were interested only in the changes between successive periods, each of which was long enough to include one business cycle or more, that procedure would be fairly defensible. The average circular velocity of the aggregate stock of circulating money, v', as just shown, apparently fluctuates around nearly constant values for substantial periods, if we make exception for the unprecedented drop in 1930–1932. It would therefore be fairly accurate to say, with respect to periods longer than business cycles, that the increase in income per year produced by net additional spending I is I multiplied by what appears to be the current trend value of the annual circular velocity of circulating money, or $v'I$. With respect to such periods, the incremental or marginal relation between national money income and money stock is usually close to the average relation (which is measured by v'); and indeed if the latter remains constant over any substantial period, this necessarily means that the two are virtually identical in their average values (as in the United States in 1899–1929). These propositions will be amplified and defended presently. For periods already past, in which the average value of v' can be determined statistically, this simple procedure—multiplying I by v'—is substantially correct, and it would not be

wildly inaccurate even for the future, with respect to periods which are longer than one business cycle.

With respect to changes occurring *within* the period of any one cycle, however, to use only that procedure would be quite misleading. We have already given reasons for believing that the circular velocity of active money alone, or v, is usually quite constant over time spans of some length. It then follows that within the period of the business cycle, changes in national money income occur solely or almost solely in association with (inverse) changes in hoards or with changes in the aggregate stock of circulating money [equations (9.1), (9.2)]. It has been shown elsewhere, however (Chaps. IV and VI), that hoards decrease and the stock of circulating money increases, so far as the self-generating cyclical processes are concerned, only because the general level of anticipations has risen, and conversely. It then follows further that within the period of the cycle, the effect of net additional spending on national money income cannot be gauged or even discussed realistically except in terms of the current position of the general level of anticipations and its changes. If anticipations at a given time are widely different from their cyclical average, the short-run effects of new spending on income may be utterly unlike the simple effect suggested by the formula $v'I$. At one extreme, in a time of rapidly growing depression, all of the new spending may be rapidly absorbed into additions to money hoards, and thus be prevented from producing more than an ephemeral increase in income. At the other extreme, in growing booms, it may happen that *none* of the new spending is absorbed into money hoards, and that the expansionary influence of the new spending on income is reinforced by dishoarding from other sources.

The problem of analyzing the effect on income of increases in the total volume of current spending, within the period of the business cycle, is therefore much more complex than might at first appear. The problem really presents itself in three stages. First, if the increase in spending is a product

of the self-generating cyclical processes already examined, its very appearance necessarily implies something about current anticipations. As shown at earlier points, they cannot be falling. This, however, is not the question of chief interest here. Second, the extent and duration of the changes in income directly produced by the increase in spending clearly depend on the state of general anticipations while and after the spending takes place.[1] If anticipations are currently falling, as just remarked, the additional money put into active circulation by the new spending will be absorbed more or less rapidly into hoards or will be used to repay bank loans and the like; and as will be shown in a moment, the subsequent increments to income which are traceable to the new spending will become smaller and smaller. Moreover, since anticipations *are* falling, the initial increase in spending must originate outside of the self-generating cyclical processes: for instance, in government deficit financing or in purchases by foreign countries. But if anticipations are currently rising or even constant, these conclusions do not follow at all. Third, and finally, the new spending itself alters the general level of anticipations by very virtue of the fact that it does produce some effect on subsequent income. It thus sets up a further spiral of actions and reactions on income, which must also be taken into account in a complete analysis. These "secondary" reactions, however, will be ignored in the present chapter. We shall be concerned here only with the direct effects on income of increased spending.

2

It is evident on the face of it, to repeat, that the character of the relation between net increases in current spending and

[1] Except to the extent that the increase in spending alters the circular velocity of *active* money by altering payment habits, thus changing the relation between income and money stock independently of changes in the size of the money stock itself. But there is no general reason why such an alteration in payment habits should be produced by the new spending, except, at most, with respect to the respending of the new funds by their recipients when the funds are moving toward individual incomes for the first time.

the resulting increases in subsequent income is governed in some degree by the general level of anticipations and its changes. This is true because at different levels of anticipations, different fractions of any given net increase in spending will be hoarded, and therefore different amounts of increase in subsequent income will be produced by the spending itself. The first problem is to find a satisfactory way of defining and measuring changes in the desire to hoard, and of relating these changes to changes in anticipations.

If anticipations are constant, liquidity preferences are constant, as shown in Chap. VI, and especially the liquidity preference with respect to money. This means that when anticipations are constant, the fraction of their total assets which people desire to hold in the form of money hoards is also constant, on an average of the economy as a whole. We cannot measure the value of total assets; but over periods of not insubstantial length, the size of current money incomes Y is a sufficiently close index. Then when anticipations are constant, the average desire to hold money hoards Ha can be expressed by the fraction Ha/Y. From equations (9.1) and (9.2), however, and from equation (9.5),[1]

$$\frac{Ha}{Y} = \frac{Mh}{Mv(1 - h)} = \frac{h}{v'}. \qquad (10.1)$$

This last fraction, however, is not a measure of anything in particular; and if we try to use it as a measure of the desire to hold money hoards, it can lead to queer results in extreme cases. If the value of $h/(1 - h)$ rises above the value of v, for example, the value of the fraction Ha/Y exceeds 1; and as h rises farther, the fraction approaches infinity. This is at best inconvenient.

We shall therefore measure the average liquidity preference for money, or the average desire to hold money hoards, by the ratio h: that is, by the ratio between the absolute size

[1] It will be recalled that the money stock is defined as, substantially, currency and demand deposits owned by non-bankers.

of money hoards and the absolute size of the money stock. When the circular velocity v of active money is constant, as we have hitherto assumed to be the case, the ratio between the absolute size of money hoards and the size of the national money income varies with this ratio h [though not in direct proportion, as shown by equation (10.1)]. By using h alone, however, we avoid any difficulty over the length of the unit time period used to measure income; if this length is short, the fraction Ha/Y may be much larger than 1. If h remains constant while the money stock changes, the absolute size of hoards and of money income will change in the same direction and proportionately. If h changes while the money stock remains constant, the absolute size of hoards will change in the same direction and proportionately, and money income will change in the opposite direction (though not in a linear proportion).

This definition of the average liquidity preference for money, or the average desire to hoard, in terms of the relation between absolute hoards and total money stock, will doubtless be criticized by some students. Nevertheless it seems to me both defensible on general grounds and necessary. If the average desire to hoard is defined merely in terms of the absolute size of hoards themselves, and if changes in this desire are measured in terms of changes in the size of the hoards, the definition and the measure have no unambiguous significance. Units of money are merely counters, for this purpose, and whether the number currently hoarded happens to be large or small has in itself no importance. What *is* important is the relation between the current size of the hoards and the money volume of current income or of total assets. If both sides of this relation change in proportion, there has clearly been no change in the desire to hoard, in any economically significant sense; but if the absolute size of hoards remains constant, for example, while the money value of income and assets falls sharply, it is at best unrealistic to say that no change in the desire to hoard has taken place. In the latter case, both the real relative im-

portance and the economic effects of money hoards have greatly increased.[1] It is not convenient, however, to use income or assets themselves as the denominator of the fraction measuring the desire to hoard. As already shown, doing so leads to awkward numerical results in some cases; and the resulting measure is also influenced in an undesirable way by the length of the unit time period that chances to be selected. We shall therefore substitute for income or assets the total money stock, which varies proportionately with income when h and v are constant.

We thus define the *average* desire to hoard, or the average liquidity preference for money, to repeat, in *relative* terms: namely, as the current ratio h between the absolute size of money hoards and the absolute size of the money stock. The value of this ratio lies between zero and 1. The *marginal* desire to hoard is an expression for the fraction of any *increment*, to money stock or to money income as the case may be, which is added to absolute hoards (or subtracted from them). For finite quantities it can be written as $\Delta(Ha)/\Delta M$, if an increment to the money stock is in question, or as $\Delta(Ha)/\Delta Y$, if income is in question. The second fraction always moves with the first one and, if v and h are constant, is a constant multiple of it. If the average desire to hoard is constant at all points in any period, the incremental or *marginal* desire to hoard must also be constant and be equal to the average desire. If the marginal desire to hoard differs from the average desire, the average desire necessarily moves toward it and, if no other change takes place, will eventually equal it. The curious asymmetry in the relation between the marginal and the average desire to hoard with respect to increases and decreases in money stock or money income, when the nu-

[1] Other examples may be cited. Thus in times of recession, liquidity preferences are rising. But if, in consequence, people repay debts to banks instead of increasing their hoards, the absolute size of hoards remains unchanged. Also, if previously accumulated hoards become transferred, in consequence of the recession, to those who owe debts to banks and if these debts are now repaid, the absolute size of hoards must *fall*. The definition of the average desire to hoard in terms of this absolute size alone is hence untenable.

merical values of the two desires are not equal, will be described presently.[1]

Strictly speaking, we should distinguish between the *desire* to hoard, which is a subjective phenomenon, and the expression of this desire in the actual acquisition and holding of hoards of a given (relative) size. The numerical values of the relation between total hoards actually held and the total money stock, or between actual increments to hoards and accompanying increments to the actual money stock, can then be described as the average and the incremental or marginal *hoarding coefficients*. At most points in what follows, however, it will prove needless to complicate the discussion by distinguishing between the desire and its execution, and we shall therefore not make much actual use of the additional concept of the "hoarding coefficients."

It is sometimes also convenient to speak of the "propensity" to hoard, in order to place stress not on what has happened already but on what *would* happen if given changes, such as an increase in money stock or in money income, were to take place. We shall use the term in parts of the subsequent discussion. The average propensity to hoard is the ratio which would prevail, under given future conditions, between the absolute sizes of *total* money hoards and *total* money stock. That is, it is measured by the value of the ratio h which would prevail under these conditions. The marginal propensity to hoard is the ratio which would prevail between *increments* to hoards and to money stock (or the ratios can be taken with money income as the base instead of money stock, which gives a ratio numerically smaller than the ratio of hoards to money stock, but one moving with it). It must be emphasized, however, that these are not the same as Keynes's definition of the terms. Keynes

[1] The relation between the marginal and the average desires to hoard can be indicated in this way. Let Ha and M be the money hoards and the total money stock previously in existence, and let ΔHa and ΔM be their current increments. Then the marginal desire to hoard is $\Delta(Ha)/\Delta M$; the average desire to hoard is $[Ha + \Delta(Ha)]/(M + \Delta M)$; and the actual change in the ratio h, or Δh, is this last fraction divided by Ha/M, and all minus 1.

uses income rather than money stock as the base, and a different definition of hoards.

Finally, it is obvious that on these definitions, the desires and propensities to *spend* are all equal to 1 minus the corresponding desires and propensities to hoard. The desires and propensities to consume and invest can be defined as fractions of those to spend.

With these definitions established, let us now see how the several hoarding categories behave in different states of the general level of anticipations.[1] For reasons that will become clearer as we go along, the discussion will be couched largely in terms of the *average* desire to hoard, instead of in terms of the marginal desires and coefficients.

3

When anticipations are constant, as remarked at the beginning of the present section, the liquidity preference for money and the relative size of money hoards h are likewise constant. So far so good. Anticipations may be constant, however, either because previous income is constant or because it is changing at a constant rate (Chaps. VII and VIII). If the *relative* size of hoards is constant when income is increasing and if the circular velocity of active money remains constant, income can increase only in association with an absolute increase in the money stock [equation (9.2)]. An increase in money stock with a constant relative size of hoards means that the *absolute* size of hoards must be increasing too, by the fraction h of each increase in money stock. This has already been shown to be inconsistent, however, with the maintenance of a continued constant increase in national income.[2] Other things equal, therefore, the increase in income must presently taper off in this situation, and anticipations will therefore fall. In other words, the

[1] The behavior of the desires and propensities to spend, consume and invest, through the business cycle, will be examined in Chap. XI, Sec. 3, below.

[2] Chap. VIII, Sec. 3. The converse is also true, of a constant decline in income when anticipations are constant. Here dishoarding will eventually retard this decline.

condition that anticipations are constant can be maintained only if income is also constant. Incidentally, in this constant-income situation the numerical value of the marginal desire to hoard can be said to be equal to that of the average desire; but since the money stock (so far as controlled by private motives and operations) and income are here constant, the proposition has no significance.

Next suppose that anticipations fall, instead of remaining constant. Then liquidity preferences and the desire to hoard will rise. This rise will cause people either to increase the absolute size of their money hoards; or to repay bank debts and the like, thus reducing the size of the money stock; or both. In either case, the *relative* size of hoards h rises. The two operations can hence be combined under a single head and be described as *effective* hoarding (later to be designated He).[1] Each reflects a rise in the *average* desire to hoard, h. At the limit, never actually reached, this average desire rises to 1; here *all* the money stock is hoarded, and production and sale for money cease. The *marginal* desire to hoard behaves asymmetrically. If the money stock rises temporarily while anticipations are falling, a proportion of the increment larger than the current numerical value of the *average* desire to hoard will actually be hoarded, and at the limit all of it will be hoarded. If the money stock falls, on the other hand, a sum of money will be dishoarded which bears a smaller proportion to the original decrement in money stock than corresponds to the current numerical value of the average desire, and at the limit the sum which

[1] The initial rise in h will obviously be greater when absolute hoards are increased by a given amount, the money stock remaining constant, than when absolute hoards remain constant while the money stock is reduced by the same amount. But it will be shown later that in the second case, the bankers or other money creators will find their reserves larger than what is called for by *their* current liquidity preferences, and will relend part of the excess. Some of the recipients of the spendings thus induced will then add part of their receipts to absolute hoards. At the end, the money stock will still not be so large as it was before bank debts were repaid; but the *ratio* between absolute hoards and money stock, or h, will be as large as in the first case.

is dishoarded will be zero.[1] These departures of the numerical values of the marginal desire to hoard from those of the average value provide the immediate mechanism by which the numerical value of the average desire to hoard, and hence the ratio h, are themselves raised.

Finally, suppose that anticipations are rising. Then liquidity preferences and the average desire to hoard are falling; and either the absolute size of money hoards will fall too, or the money stock will increase, or both. In either case, h falls. At the limit, the average desire to hoard will fall to zero. Here hoards cease to exist. This limit too, however, is never actually reached. The *marginal* desire to hoard again behaves asymmetrically. With respect to increases in money stock, it is lower than the *average* desire and at the limit is zero. With respect to decreases in money stock, it is *higher* than the average desire and at the limit is 1.[2] This behavior provides the mechanism by which the average desire to hoard and hence h are lowered.

These definitions thus permit us to relate changes in the desire to hoard to contemporary changes in anticipations in a simple manner, and to estimate relative changes in the average desire to hoard with some assurance. A change in anticipations entails a change in liquidity preferences and

[1] That is, if anticipations are falling and the money stock *rises* by a small amount, the part of the increase which will be added to hoards is larger than the sum which will be withdrawn from hoards and spent—be dishoarded—if the stock *falls* by the same small amount. In the first case, the ratio of the change in hoards to the change in stock is greater than h; in the second case less. If anticipations are falling sharply, the ratio in the first case is presumably almost 1, especially for the moderate- and high-income groups; in the second case almost zero until consumption approaches the levels each individual regards as minimal.

Analogous propositions also apply, at least in the short period, to the hoarding of increments of income and to the dishoarding which may attend decreases in income. This is true because in the short period the circular velocity of active money is nearly constant, and a change in income must hence be accompanied by corresponding changes in money stock and hoards. The latter changes will follow the patterns of behavior just indicated.

Another case of asymmetry in relationship governed by the direction of current change was examined earlier (Chap. III, Sec. 2).

[2] These relations are the converse of those examined in the preceding footnote.

hence in the average and the marginal desires to hoard. The average desire can be expressed in terms of the ratio h between the absolute sizes of hoards and of money stock, and the direction and relative size of changes in h can be measured statistically. For periods over which it can be assumed that the circular velocity v of *active* money does not vary significantly, changes in this ratio h are inverse to changes in the circular velocity v' of the aggregate stock of circulating money.[1] As seen in the last chapter, fairly good annual data are now available on the movements of v'. It will be shown in subsequent sections that these definitions and methods of measurement also provide a simple and convenient way of expressing and estimating the effect of changes in anticipations on the income-spending relation. The *marginal* desire to hoard cannot be estimated directly from the statistical data now available, but its relation to the current value of the average desire can be approximated by reference to the apparent current movement of the general level of anticipations.

It may be pointed out that Keynes, in his discussions of the marginal propensity to hoard, takes no account of the asymmetries just described. He tacitly assumes that the numerical value of the marginal propensity is the same with respect to both increases and decreases in the money stock or in income. His analysis is strictly valid, therefore, only for the case in which the general level of anticipations is constant. But in this situation, as just shown, income is also constant, and so is the money stock so far as its size is controlled by private operations and motives. Keynes's case, then, is one in which the increments to income and money stock are really zero and in which the marginal propensity to hoard hence finds no objective expression in actual hoarding.

4

We now have in hand all the weapons necessary to attack the central problem of this chapter, even within short

[1] From equation (9.5), above, h equals $(1 - v'/v)$, where v' is less than or equal to v.

periods. This is the problem of the relation between net increases in spending and the resulting increases in subsequent income. We shall again examine three different types of situation. In one, the general level of anticipations is constant; in another, it is falling; and in the third, it is rising. In all three cases, it will also be supposed that the average circular velocity v of active money remains constant, though this is not essential.

First, assume that the general level of anticipations is constant. Then both average liquidity preferences as a whole, and in particular the average desire to hoard money, are likewise constant. Income is also constant, and so are the sizes of the money stock, of absolute hoards, and the *relative* size of hoards h. (It was shown in the previous section that because of the resulting increases or decreases in the absolute size of hoards, anticipations cannot remain indefinitely constant if income is rising or falling, even at a constant *rate*.)

Now suppose that with the general situation stable in this sense, the government buys one day's services from all individuals, paying them a total amount I. Let the purchase be financed by printing additional paper money. Then both national money income Y and the aggregate stock of circulating money M are at once increased by the amount I. Also suppose that the payment I is small and non-recurrent, so that it produces no perceptible subsequent change in the general level of anticipations or in the average and marginal desires to hoard money. (This hypothetical case is selected to avoid needless complications over both the motivations and the effects of the original increase in spending.)

Since the general level of anticipations is assumed to be constant, the numerical value of the marginal desire to hoard money is equal to that of the average desire, as shown in the preceding section; the latter value, measured in terms of the money stock, is the ratio h. Therefore, a quantity hI of the additional money will be used for additional "effective" hoarding. Only an amount $(1 - h)I$ will be added to

the stock of active money. This amount, however, will move from the original receivers into the production-and-exchange process and back to individuals as income in an endless series of waves, and with an average circular velocity (after the transitional adjustment) of v. Income per unit time period, as can be seen from equations (9.2) and (9.4), will therefore be increased by $(1 - h)vI$, or by $v'I$. That is, if no other factors of change are operative, after the transitional adjustments are completed we have, per unit time period,

$$Y_1 = (M_0 + I)(1 - h)v = Y_0 + (1 - h)vI; \quad (10.2)$$

or

$$Y_1 = (M_0 + I)v' = Y_0 + v'I. \quad (10.3)$$

This is the short-cut answer given by the preceding analysis and equations to the question of how much income will be increased by net additional spending of amount I, when anticipations are constant. The full indicated increase in income will appear, also, by the end of the next following average circulation period of circulating money $(1/v')$, subsequent to the new spending.[1]

The reader may be inclined to demur over the treatment of hoards, for the increase in effective hoarding by the precise amount hI is easier to understand for the society as a whole, considered as a rather abstract entity, than for any one individual or for an inchoate group of them. The treatment and the results are equally valid, however, for individuals.

To take the extreme case, first assume that the aggregate stock of circulating money is fixed, except for the small increase I. Also suppose that every individual maintains the same constant ratio h between his money hoards and his income receipts per unit time period; this last period must then be defined as the average circulation period of active money, which we have assumed to be substantially constant

[1] See Chap. IX, Sec. 2, above, and the note at the end of that chapter.

over intervals of some length.[1] Then suppose further that one individual alone initially receives *all* of the net new government spending I. This individual will therefore at once add an additional amount hI to his hoards (the money stock being assumed constant), in order to raise the size of his hoards to their previous ratio to his current income receipts, and will spend only $(1 - h)I$ on additional consumption or investment. Apparently, he alone has done all the effective hoarding postulated by the equations for the whole society; and if the recipients of the increased sums which he now spends increase their hoards, in turn, the total volume of hoarding will become larger than what is required by our assumptions. But in the first individual's next income period, he will get nothing at all from the government, and his income receipts will fall back to their former level, or nearly to it. He will then find that his hoard is now much too large to satisfy the constant ratio h, and he will spend all or nearly all of its recent increment hI. That is, he will dishoard again. Other recipients of the new streams of income will behave in similar fashion, from the very meaning of the assumption that the marginal and the average desires to hoard, for the society as a whole, are constant. Quite rapidly, therefore, and by a process of progressively closer approximations (as the additions to the current incomes of successive individuals become progressively smaller), the increase in the total absolute hoards of the society as a whole will become equal to precisely the required quantity, hI.

Second, however, assume that the aggregate stock of circulating money is variable and consists partly of deposits resting on bank loans. Then the individuals who first receive the net additional government spending, or other individuals whose incomes are later increased in consequence of the new spending, may elect to repay bank loans in the amount hI

[1] On this definition of the unit time period, the term v' in equation (10.3) becomes equal to 1. The assumption that each individual maintains the ratio h is a matter of convenience alone, since it is also assumed that the *average* ratio for the whole society remains unchanged.

instead of increasing the absolute size of their hoards. Here the aggregate stock of circulating money, which the new spending originally increased by I, is now reduced again by the amount hI, which flows into bank reserves. Clearly the effect on the quantity of *active* money is precisely the same as in the case when absolute hoards are increased. The net increase in the quantity of active money is $(1 - h)I$ in each case. The ratio h, however, between *absolute* hoards and money stock, is now lower than before, whereas we had assumed it to remain constant (the money stock has increased in size by the amount $(1 - h)I$, but absolute hoards are unchanged). This seems contradictory. But the bankers also have an average liquidity preference, which must likewise be assumed to be constant. When loans are repaid to them in an amount hI, the ratio between the bankers' reserves and their liabilities is correspondingly increased, and their relative liquidity position (in terms of *all* their assets and liabilities, not of "money" holdings alone) is raised above the previous level. To regain this previous level, they will therefore relend or reinvest most of the excess of their reserves above the previous ratio (actually, all but a percentage h of any increase in their current receipts per unit time period). The proceeds will then flow through the society again until, perhaps after a number of such repayment and relending operations, they reach individuals or enterprises that use part of their increased income receipts to increase their money hoards, instead of using them to repay loans. Thus by a series of progressively closer approximations, the total absolute hoards in the society as a whole will again be increased by precisely the required quantity hI, and the ratio h will itself be restored.

With average liquidity preferences and hence the marginal and the average desires to hoard constant, it therefore makes no difference at the end whether the sum hI is initially added to absolute money hoards or is used initially to repay bank loans. In either case, if the desire to hoard is constant, the absolute size of hoards will eventually be increased by the

full amount hI. It is hence convenient, as already suggested, to combine the two alternatives and to describe them both as increases in *effective* hoarding.

An act of net additional spending I thus produces direct effects on subsequent income which, in the present case, are numerically determinate. If the general level of anticipations remains constant, income per year will be permanently larger than the volume which would otherwise have prevailed, and larger by the amount $(1 - h)vI$: that is, in terms of the average circular velocity of the aggregate stock of circulating money, larger by the amount $v'I$.

In thus summarizing the successive waves of increments to income, we have said nothing about the choices made by income spenders between consumption and investment. Nor is it necessary to do so here. As long as anticipations remain constant, the two types of spending will together produce—by definition—the postulated further effects on income. If they did not, income and hence anticipations would vary from the previous pattern, thus contradicting the initial assumption. The preceding analysis, therefore, is also not dependent for its validity on any hypothesis about the existence of unexploited investment opportunities.

We shall also say nothing here about the "secondary" effects on anticipations, produced by the original rise in income to levels higher than would otherwise have prevailed. We avoided this problem at the outset by assuming that the original increase in spending was in itself too small to have a perceptible effect on anticipations. The problem will, however, be dealt with later.

5

In the case just examined, the amount of the increase in income per unit of time produced by a given block of net additional spending was shown to be governed by two factors, namely, the average circular velocity of active money and the marginal desire to hoard money. In this case, since the general level of anticipations was assumed to be

constant, the numerical values of the marginal and the average desires to hoard were both constant and equal to one another. It was therefore possible to express the combined effect of circular velocity and the desire to hoard by using as a multiplying factor the average circular velocity of circulating money itself, v'; this last is equal to $(1 - h)v$.

Suppose, next, that the general level of anticipations is steadily falling. Then the average desire to hoard is steadily rising; and if the money stock is variable, its size is shrinking. That is, in the preceding equation, h is rising, and v' hence falling; M is also falling; and for both reasons Y is declining.[1] A conspicuous example of this combination of changes is provided by the history of the United States in 1929–1933.

If net additional government spending financed by printing new currency is undertaken in this situation, the new spending will not have the effects on income found in the preceding case, for it takes place in a contracting universe. In the preceding case, additions to effective hoards stopped when the previously existing ratio h, of absolute hoards to the aggregate supply of circulating money, had been reestablished. That is, the *average* desire to hoard remained constant. In the present case, however, the accumulation of ever larger hoards or the reduction of the money stock—both entailing a rise in h—continues indefinitely, because the average desire to hoard is steadily rising. The *marginal* desire to hoard, as shown in Sec. 3, above, is here higher than the average desire to hoard with respect to increases in money stock and income, but lower with respect to decreases.

The effect of the new spending on income in this situation could be depicted, with respect to any specified period of time, by appropriate modifications of the equations previously presented. The terms h and v' would here be assigned their weighted-average values for the period in question,

[1] A change in the average desire to hoard, measured by h, can clearly be an "original" source of change in spending and hence in subsequent income. It is not necessary to present here expressions for the quantitative relations involved.

and the increments to income traceable to the new spending I would be given for this period by the same expressions as before, $(1 - h)vI$ or $v'I$. But this procedure is cumbrous and would be valid only for the specified period. Moreover, these expressions do not permit an immediate answer to the question of how great the sum of the increments to income will be at the limit, although the fact that the universe *is* contracting clearly indicates that such a theoretical limit must exist. This last is the question to which the Keynesian "multiplier" analysis is chiefly directed, as will appear later. A different type of procedure from that used above will therefore be more helpful, as follows.

Since the average desire to hoard is steadily rising, the first recipients of the additions to income which the new spending I produces will spend on goods and services only a fraction of their income receipts, which we may designate by s, and will increase their effective hoards by $(1 - s)$.[1] The recipients of the further new income sI, which results from the second wave of spending, will in turn spend only a fraction s of their own receipts; they will spend s^2I dollars. And so on indefinitely. As long as the average desire to hoard continues to rise, these successive secondary increments of income, which result from the original new spending I, thus constitute an infinite diminishing progression (since s lies between zero and 1), with a finite limiting sum. The sum of all the increments to income Y, through infinity, is

$$\Sigma(\Delta Y) = I(1 + s + s^2 + s^3 + \cdots) = \frac{I}{1 - s}. \quad (10.4)$$

[1] The term $(1 - s)$ is obviously not the same thing as the term h, used previously. The first is the proportion of current income receipts which is *added* to effective hoards; it measures the marginal desire to hoard. The latter is the ratio between absolute hoards and money stock. No point would be served here by working out the cumbrous expression for the relation between the two under varying circumstances. In the present case, as shown in Sec. 3, above, the marginal desire to hoard is higher than the average desire with respect to increases in income, lower with respect to decreases.

The term s measures what will later be called the marginal desire to spend—to spend income on goods and services. Its value lies between zero and 1 as limits.

If s has a value of 0.80, for example, the limiting value of the sum is $5I$. It will require infinite time to reach this limit, but the bulk of the increase, with this value of s, will come in the first few terms. The successive increments of income shown after the first one are, of course, the increments produced by the spending of a fraction s of a given block of income, the receipt of the consequent further income by others, the respending of a fraction s of these latter receipts and so on. The *average* interval between the time when one of these blocks of "secondary" income has been received and the time when the next "secondary" block produced by the spending of the first block is received (that is, the average time distance between I and sI, between sI and s^2I, and so on) is hence simply the average circulation period of active money, or $1/v$.[1]

This expression gives the sum of the increments to income *through* infinite time. For some purposes, it is also useful to know the amount by which income *per unit time period* will be raised above the levels which would otherwise have prevailed. We have here supposed that the successive secondary increments to income, sI . . . , are increments resulting from the spending of previous income. As just remarked, the *average* interval elapsing between the receipt of a block of income, the spending of part or all of that income, and the consequent receipt by others of the next increment of income produced by this spending is then simply the average circulation period of active money, or $1/v$. The sum of the income receipts in the first year, beginning with the time when the original new spending I was first received as income, is the first v terms in the progression given above; in the second year it is the second v terms; and so on. Through a period of t years, the *average* increase in income per year produced by

[1] If the fraction s is taken to refer not merely to income receipts but to all business receipts, at each stage, the analysis remains valid except that the appropriate time interval then becomes the reciprocal of the *exchange* velocity of money, instead of being $1/v$. The whole process of diffusion of these income effects is then greatly speeded up.

the new spending, the average amount by which it is raised above the levels which would otherwise have prevailed, is

$$\frac{\Sigma_0^t(\Delta Y)}{t} = I\left(\frac{1 + s + s^2 + \cdots + s^{vt-1}}{t}\right). \quad (10.5)$$

This case and the two preceding equations rest on the assumption that the average propensity to hoard rises steadily (at the limit, to 1). It is for this reason that the increments to subsequent income produced by a given act of new spending are of progressively diminishing size and that their sum through infinite time has a finite limit. It follows further, however, that as the successive increments to income diminish, the volume of effective hoarding must increase. That part of each block of income receipts which is *not* spent, or a fraction $(1 - s)$, is used to increase effective hoards and thus to reduce the supply of active money. At the limit, *all* of the new money I which was originally spent by the government is thus absorbed into effective hoarding. The additions to effective hoards, ΔHe, again form a diminishing progression. They amount to a part $(1 - s)I$ of the first wave of income receipts, a part $(1 - s)sI$ of the second, and so on. The sum of these additions, to infinity, is

$$\Sigma(\Delta He) = I[1 - s + (1 - s)s + (1 - s)s^2 + \cdots] = I. \quad (10.6)$$

The conclusions thus reached have an extremely important bearing on government deficit-financing policies and the like, so far as these policies are designed to raise income in absolute terms. As long as the average desire to hoard continues to rise, any one act of net additional government spending can evidently produce only a steadily diminishing set of additions to income, and at the limit *all* of the original new spending will be absorbed into hoards. It follows further that merely in order to raise national income by some given amount above the levels which would otherwise have prevailed and then to hold it there (disregarding changes in income originating from other sources), in this situation the

government must keep on repeating the injections of net additional spending indefinitely, as long as the propensity to hoard keeps on rising. Thus if we take the circular velocity of active money as 4 per year (which is presumably too high but is a convenient round number) and hence take the length of the circulation period of this active money as 3 months, if we again take the value of s as 0.80, thus assuming that the average desire to hoard continues to rise, and if we suppose that the government keeps on injecting net additional spending of an amount I dollars every 3 months indefinitely, the government will merely succeed in raising income, at the limit, to a level which is only $5I$ dollars per year higher than the level which would *otherwise* have prevailed.[1] In the preceding case, on the contrary, with the average desire to hoard constant, *each new injection* I raised subsequent income permanently higher than it would otherwise have been by $(1 - h)vI$ dollars per year (v being assumed constant) —that is, by $v'I$ dollars.

As long as the average desire to hoard is rising, the government thus faces a seemingly endless and perhaps hopeless task. The task is likely to seem the more hopeless because, as long as anticipations continue to fall and the average desire to hoard hence continues to rise, income as a whole will continue to fall for reasons not directly connected with the new government spending. The government's action will therefore produce not an absolute increase in total income (except for a short time at the outset, when its new spending program is just beginning) but only a retardation in the current rate of fall. This whole problem of government policy will be examined in another chapter.

[1] As long as hoarding continues to increase and s hence remains less than 1, then *within* any circulation period of active money ($1/v$), the sum of all the increments to income produced by an infinite series of equal previous net additional spendings, occurring at equal intervals of time, is the same as the sum *through* infinite time of the increments produced by any one such act of net additional spending, if "spending" I is defined as the amount spent per circulation period of active money and if this period is constant. That is, it is equal to $I/(1 - s)$. See equation (10.4) and also the parallel proposition in the Note at the end of Chap. IX, above.

The general level of anticipations never falls indefinitely far in actuality, however, and hoards hence never rise to the point where they include the whole money stock. That is, the contraction of business activity and of income always ceases sometime. The case we have been examining is hence one of limited duration.

6

Finally, suppose that the general level of anticipations is steadily rising and the average desire to hoard hence steadily falling. Here we have an expanding universe, and again no definite relation can be postulated between net additional spending and subsequent increments to income except for specified periods of time. A proportion of each initial addition to the stock of active money will be effectively hoarded, until the currently prevailing ratio between hoards and money stock is re-established. But the ratio itself is falling steadily, and the successive secondary increments to income ultimately traceable to the original net additional spending will hence *increase* in size (because of the dishoarding of a part of those fractions of previous increments which, at the time of their first receipt, had been effectively hoarded). If $(1 - s)$ now is the *average* fraction of current income receipts which is added to effective hoards in a specified time period, then for that period the sum of the increments to income produced by net additional spending is given approximately by the second member of equation (10.4), above (but there is, of course, no finite limiting sum, since s itself is increasing indefinitely). The average increase in income per year, above the levels which would otherwise have prevailed, is similarly given for the specified period by equation (10.5). At the limit, all additions to effective hoarding cease, and s hence rises to 1. Then the increase in income per unit of time directly produced by any net additional spending I would be merely vI [compare equation (10.2) above; ΔHe becomes zero], and each additional block of such spending would produce a further similar increase.

Like the previous case, however, this general type of situation cannot continue indefinitely. Anticipations do not rise, nor does the average desire to hoard fall, without limit; and the numerical value of the ratio h, which never rises to 1, also never falls to zero. The case of rising anticipations is that of the expansion phase of the business cycle; the case of falling anticipations is that of the contraction phase. Both are eventually self-terminating, through the action of processes which have been examined in earlier chapters.[1]

7

The conclusions reached in the last two chapters on the problem of the income-spending relation can now be summarized. These conclusions were obtained from a study of government deficit spending effected by issuing new money. *Any* change in the money volume of current spending, however, except one arising from a change in v, must entail a change either in money stock or in the absolute size of hoards or in both. The case we selected for study is hence representative, not merely a special situation.

First, the character and the numerical value of this relation (that is, the amount by which income per unit of time will be raised above the levels which would otherwise have prevailed, expressed as a multiple of the original net additional spending) are proximately governed by the average circular velocity of *circulating* money, v', and its components. In all cases, the rapidity with which net additional spending produces its "primary" equal increment of income is governed by the average circular velocity of *active* money alone, v. Theoretically, infinite time must elapse before the whole of this primary increment of income will be received for the first time; but because of the cumulation of "second-

[1] On the problems examined in this chapter and on the results reached, also compare the discussion in Kalecki, *Essays in the Theory of Economic Fluctuation*, Chap. 2. Kalecki takes no account of the apparently enduring change in the values of our terms h and v' after 1930–1932 and hence gets a hybrid value for v' of 2.25. His estimate of the lag of changes in income behind those in investment, however, seems quite plausible (see the last paragraph of Chap. IX, Sec. 2, above).

ary" increments, the full initial effect on income will be produced by the end of the first average circulation period of active money, $1/v$. The size of the further "secondary" increments of income, which the respending of part or all of the primary increment produces, is governed both by the current circular velocity of active money alone, v, and by the level and movements of the marginal desire to hoard. When the general level of anticipations is constant, and the numerical value of the marginal desire to hoard hence equal to that of the average desire, this size can be conveniently calculated by using as a multiplying factor the current average circular velocity of *circulating* money, v'.

Second, these secondary increments of income, produced by an original act of net additional spending, constitute an infinite progression. If we assume that the circular velocity of active money alone, v, does not vary materially and if the average desire to hoard remains *constant*, the successive terms in the progression are of substantially equal size, and the progression has no finite limiting sum. The increase in income *per unit of time*, above the levels which would otherwise have prevailed, is then equal to the amount of the original new spending multiplied by the circular velocity of *circulating* money, v', or by $(1 - h)v$. If the average desire to hoard is falling, the successive terms in the progression are of increasing size, and again the progression has no finite limiting sum. If the average desire to hoard is rising, the successive terms are of diminishing size, and do have a finite limiting sum if the average desire continues to rise indefinitely toward 1.

Third, since the average desire to hoard moves inversely with the general level of anticipations, we can restate these conclusions in the proposition that the character and the numerical value of the income-spending relation are governed by the circular velocity of *active* money, v, and by the general level of anticipations. Moreover, since the circular velocity of active money itself can presumably be treated as fairly constant over periods of several years at a time, the character

of the income-spending relation within such periods—that is, the determination as to whether the increments of subsequent income produced by new spending will be constant, increasing or decreasing in size—is chiefly governed by the general level of anticipations and its changes. The numerical value of the income-spending relation at any time, other things equal, must hence fluctuate with the business cycle.

Finally, it is evidently impossible to forecast the numerical value of the income-spending relation accurately for *short* periods, except so far as a constant general level of anticipations can be forecast for such periods. But the inter-cycle trend of the average circular velocity of *circulating* money appears to have been not far from horizontal at most times in recent decades, except for the unprecedented drop to a lower level in 1930–1932. This means that as between one business-cycle period and the next in these eras, the value of the average circular velocity of circulating money, v', remained substantially constant. This means in turn, however, that the average relative size of hoards h also remained substantially constant as between such periods (apart from changes in the velocity of *active* money, here assumed negligible); hence that the numerical values of the marginal desire to hoard did not diverge much from those of the average desire, as between such periods; and hence that as between one such period and the next, v' could be used with reasonable accuracy as a multiplying factor to estimate the income-spending relation. If it can be anticipated that this generally horizontal movement of the trend of circular velocity v' will be substantially maintained in the future, then with respect to the *average* results over periods of one whole business cycle or more, it is fairly safe to expect that the numerical value of the income-spending relation will approximate the average (and, by assumption, constant) trend value, for the period, of this circular velocity v'. On the other hand, if the American economy is now passing into a phase of its history in which the trend of the general level of anticipations may be expected (for reasons we shall

examine later) to decline indefinitely toward zero, and the trend of the average desire to hoard hence to rise indefinitely toward 1, this forecast will be incorrect. Here the successive increments to income produced by an original act of net additional spending will become progressively smaller. But the average numerical value of the income-spending relation which can be expected, for any period which is a multiple of the length of business cycles, will still be equal to the (lower) trend value of v' expected for that period.

It may also be repeated, for the sake of emphasis, that from the algebraic point of view the numerical value of the income-spending relation turns on the values assigned to the coefficients of two sets of infinite progressions. One is the infinite diminishing progression formed by the explicit or implicit return to individual income receivers, from the stream of inter-firm payments, of successive fractions of any sum originally spent by individuals or their agents on goods or services. The average time required for half of any sum thus spent to return to individuals as income for the first time and to be spent again is the average circulation period of *active* money ($1/v$), and is presumably quite stable. When current spending changes in volume, the full effect will appear in income by the end of the next following period $1/v$, if hoards remain constant, or of the period $1/v'$, if they change in size. The other set of infinite progressions is that which is formed by the "*secondary*" increments of income produced by the respending of those "primary" increments that arise directly from, and in total amount are equal to, the original net additional spending itself. Depending on the direction of the current change in the general level of anticipations, the terms in these progressions may be either increasing, substantially constant or decreasing in size. Only in the last case do they possess a finite limiting sum.

The analyses made in the preceding sections would gain an air of greater precision if they were all stated, so far as hoarding is an element in them, solely in terms of the *marginal* desire to hoard instead of the average desire to

hoard. Our use of the latter concept admittedly compels us at many points into statements which sometimes seem loosely phrased and inconclusive. Several considerations, however, have worked against making the marginal desire to hoard the main focus of this part of the analysis. In the first place, the marginal desire to hoard itself cannot be "explained" except in terms of the elements which also determine the *average* desire to hoard. Without this explanation, it must be treated merely as a datum; and this is unsatisfactory. In the second place, unless we also explain the average desire to hoard, we have no way of relating the numerical value of the marginal desire to such over-all measures as the *total* money stock, total money hoards, total money income, the circular velocity of money, and the like. In the third place, the relation between the marginal desire to hoard and the average desire is asymmetrical unless anticipations are constant and the numerical measures of the two desires hence equal. This makes an exposition running in terms of the marginal desire alone complex, and possibly misleading.

Finally, the most important factor of all, there is at present no *direct* way of measuring the marginal desire to hoard or the marginal hoarding coefficient. The data presented at the end of Chap. IX show the marginal relation between changes in income and changes in money stock, but from these data alone it is not possible to deduce anything except the direction of change of the marginal desire to hoard. A rough estimate of the numerical value of the marginal desire to hoard *can* be made, of course, by comparing estimated increments to hoards with the estimated size of total hoards themselves. But estimates of the latter magnitudes, in turn, cannot be made at all except with the tools and information already used to estimate the *average* desire to hoard and its changes. In view of all these considerations, we have therefore found it both more effective and indeed essential to place our chief reliance on the average desires and coefficients, using the marginal desires and coefficients

only where they could cast real additional light on the problems at issue.

8

The general relation of the argument of this chapter to the analysis of business cycles developed previously is clear. The concepts and equations of the present chapter provide the monetary counterparts of changes in the receipt and spending or non-spending of the national money income, and show the monetary channels through which these changes work out. They do not compete with but are supplementary to the dynamic equations presented at earlier points.

The principal monetary counterparts of a change in income, for periods within which the circular velocity of active money can be taken as substantially constant, are changes in the size of the total stock of circulating money and changes in the relative size of hoards. That is, they are changes in the stock of "active" money, $M(1 - h)$. Such changes are, stated inversely, effective hoarding or dishoarding. Now it is evident that changes in either direction do not go on indefinitely. The principal explanation of the cessation and reversal of changes, however, cannot be found in the monetary mechanism alone. It must usually be sought in the factors which were discussed in preceding chapters, that is, in the causes and effects of changes in anticipations. No society has ever managed to continue its expansion without check or limit, nor has any society ever hoarded itself to death. Modern societies suffer intermittently from but do not die of pecuniary anemia.

The checks on contraction are perhaps more puzzling from the monetary point of view than the checks on expansion, which have been exhaustively explored by generations of writers. In times of business crisis and recession, vast numbers of individuals and firms do hoard as much as they can, in anticipation of worse to come. Why do they nevertheless not succeed in strangling all money-using economic activity? As just remarked, the chief part of the answer is

presumably to be found in those factors which check and reverse business recessions, and which were discussed at earlier points. A certain amount of light is also cast, however, by the character of money-using habits and their possible changes. Large groups of people—for example, most wage earners and farmers—cannot hoard at all when depression sets in, because their incomes are too small, and instead are likely to dishoard in order to meet their minimum costs of living. Many business enterprises are in a comparable situation. In addition, many large corporations dishoard in depressions in order to keep up interest and even dividend payments. Later on, when the depression is thought to be approaching an end (though the end may not yet really be in sight), many individual and corporate investors begin dishoarding in order to take advantage of apparent investment bargains. For the society as a whole, the *average* desire to hoard, as here defined, hence cannot rise indefinitely and sooner or later begins to fall again. Then a new era of expansion gets under way.

Chapter XI

THE MULTIPLIER, "SAVING" AND INVESTMENT

I

IN all of the three principal types of situation examined in the preceding chapter, the relation between the size of a given net addition to spending and the size of the subsequent increments to income was shown to be proximately determined by two factors, namely, the circular velocity of active money and the current desire to hoard. Changes in the latter desire, as defined, are in turn governed (inversely) by changes in the general level of anticipations. The "secondary" effects on anticipations and hence again on income, which are produced by the increments to income directly traceable to the original increase in spending, were disregarded in the preceding chapter.

Because of the extensive discussion of the so-called "multiplier" concept, it is worth while to pause here for a moment to see what answers the multiplier analysis gives to the same problems and what factors it employs as determinants.

At the outset, it is necessary to distinguish rather sharply between two different sets of presentations, both of which are "multiplier" analyses. One, the original analysis, was worked out by R. F. Kahn in 1931 and was later elaborated by Keynes. The other was developed by J. M. Clark and published in 1935 and subsequently. Clark first gave some of the early Kahn-Keynes chain of ideas, then some of the circular-velocity-of-money analysis which we have outlined above, and ended by putting his chief stress on "leakages." These last substantially correspond to what we have here called "increases in effective hoarding." Clark did not make full use of the tools provided by the circular-velocity analy-

sis, however, and he dealt only with the case in which "leakages" continue indefinitely at some constant rate.[1] He was hence unable to reach any generalized formulation of the income-spending relation adequate to cover all types of situations.

The Kahn-Keynes analysis itself has been extensively discussed and criticized by other writers, perhaps beyond the point of diminishing returns, and no attempt will be made here to review this literature.[2] For present purposes, it will suffice to outline briefly the argument presented in Keynes's *The General Theory of Employment, Interest and Money* (which differs in important respects from his earlier statements) and to comment on this argument.

Keynes declares[3] (my italics) that "employment can only increase *pari passu* with investment" and, more explicitly,

[1] He also used as his circular-velocity figure an estimate that I had made in 1933 of the velocity of the "total" stock of money, including time deposits and hoards of active money. This procedure, however, seems wrong. Since the velocity both of hoards of previously active money and of true time deposits is zero, they are irrelevant to a study of flows of money payments. Had he used "circulating" money alone, excluding time deposits, he would have obtained an estimated circulation period not widely different from the 2-month period he actually selected arbitrarily. It would have been still better, of course, to use active money alone, for which we have here estimated the circulation period to be something over 3 months.

I doubt if Clark's concept of the speed of transmission of secondary income effects *independently* of the circular velocity of money [*Economics of Planning Public Works* (1935), p. 88], a concept analogous to that of the transmission of sound waves along a body of water which is also in motion, has meaning if the general level of anticipations is constant. In this situation, firms will increase the scale of their operations beyond what was previously planned only on the actual receipt of additional unexpected orders, and conversely. If average anticipations vary, on the other hand, the transmission of the first effects of their change may be instantaneous to all parts of the economic system.

[2] See especially G. von Haberler, *Prosperity and Depression* (2d ed., 1939), pp. 222–232; R. J. Saulnier, *Contemporary Monetary Theory* (1939), pp. 326–336; F. A. Lutz, "The Outcome of the Saving-Investment Discussion," *Quarterly Journal of Economics*, August, 1938, pp. 608–612; the symposium in the same journal for August, 1939; and Fritz Machlup, "Period Analysis and Multiplier Theory," in the same journal for November, 1939. The attempts to engage in statistical "testing" or "illustration" of the multiplier relation (especially by Colin Clark) have been, to date, beclouded by difficulties over the data used, and therefore no critique of them will be offered here.

[3] *The General Theory of Employment, Interest and Money*, pp. 113, 118.

that with certain qualifications "fluctuations in investment *will lead to* . . . fluctuations in employment"—and hence in income. Moreover, "in given circumstances a definite ratio, to be called the Multiplier, can be established between income and investment." This ratio is obtained from the marginal propensity to consume, which "tells us how the next increment of output will have to be divided between consumption and investment,"[1] and in Keynes's analysis is usually assumed to be less than 1. Suppose it to have a numerical value of 0.80. Then of any increment of total output, 0.80 will be output of consumption goods, 0.20 output of investment goods. Or, stating the same thing the other way around, an increment of investment-goods output will be associated with five times as large an increment of total output, and therefore of income. Here the value of the multiplier is hence 5.

These propositions can be taken in either of two senses. First, the multiplier can be regarded as simply an algebraic statement of the relation that prevails in any period (presumably when "equilibrium" has been established) among actual investment, consumption, total output and the income derived therefrom. In that event, no exception can be taken to it, and its numerical value is determined by the marginal propensity to consume. In fact, the "multiplier" then *is*, by definition, simply the reciprocal of 1 minus what the average numerical value of this propensity has been in the period. But on this interpretation of its meaning, the multiplier cannot possibly have any "causal" significance. It does not and cannot say that *because* a given volume of net additional investment has taken place, *therefore*, other things equal, total subsequent output will be increased by, say, five times this amount. It can make no attempt to say that *all* of the increment to total output in the given period is in any sense the *result* of the increment of investment in that period, though the ratio between the two outputs is asserted to be the "multiplier." On this interpretation, which

[1] *Ibid.*, p. 115.

we may call the "static" or *ex post* or "definitional" interpretation, the multiplier concept is hence correct but is useless for dynamic analysis. It is the interpretation which Keynes first presents in *The General Theory of Employment, Interest and Money*.

Second, however, the multiplier can also be interpreted in a causal or dynamic sense (essentially, *ex ante*), as a causal description of the end result of processes that work through time; and I think it is this interpretation to which Keynes unconsciously shifts as he goes on with his argument—especially in his conclusions as to public policy.[1] But on this interpretation, the multiplier concept, though useful, is faulty in that it envisages only one of a number of possible situations. It is entirely correct only where both of two conditions are met, conditions of which Keynes himself recognizes only the first. They are that (1) the marginal propensity to consume is less than 1—that is, not all of any increment of income will be consumed—and (2) the supply of investment opportunities is so deficient that *none* of the increments to subsequent money income, which are produced by the original net additional investment, will be used to make *further* new investment. That is, all of the non-consumed part of these subsequent increments to income will be hoarded. If these two conditions *are* met, however, the recipients of the additional income first produced by the original act of new investment will spend only, say, 0.80 of this increment of income on consumption, hoarding the rest; those who receive income from this latter expenditure on consumption will in turn spend only 0.80 of their income

[1] The confusion between the two senses really appears at the very beginning of his argument. The definition of the marginal propensity to consume, quoted two paragraphs above, implies what we have here called for brevity the "static" or "definitional" meaning of the multiplier. But in his own next paragraph (*ibid.*, p. 115), Keynes says that the investment multiplier k tells us that "when there is an increment of aggregate investment, income *will increase* by an amount which is k times the increment of investment" (italics ours). Also compare the use of the phrase "will lead to" (*ibid.*, p. 118), quoted above. If words mean anything, these latter passages surely imply the "dynamic" or "causal" sense of the multiplier.

receipts on consumption, again hoarding the rest; and so on in an infinite diminishing progression. But this progression has a finite sum, as we have already seen [compare equation (10.4)]. This sum of the increments to income through time is here $1/(1 - 0.80)$, or 5, which is the value of the "dynamic" multiplier—the same as the value of the "static" multiplier when the value of the marginal propensity to consume is likewise 0.80. Under these conditions, the numerical value of the marginal propensity to consume is evidently measured by our term s [equation (10.4)].

But why should all of that part of the increments to subsequent income which is not spent on consumption necessarily be hoarded? Two sets of consideration work against the conclusion that it will be, one based on the conditions surrounding the original act of net new investment and the other based on the very effect of this new investment itself. First, if the original new investment was financed by the creation of additional money, the money stock is at once increased; "the" interest rate will fall, on the Keynesian view; and additional new investment becomes attractive—thus starting a further series of increments to income which is not included in the Keynesian multiplier analysis. If the original new investment was financed by a voluntary reduction in hoards, on the other hand, with no change in the stock of money, then liquidity preferences must first have shifted, thus again lowering "the" interest rate; and again further net new investment, in addition to the original increase, becomes attractive on Keynesian grounds. Second, the mere fact that the original net new investment *does* produce some increase in subsequent income, relative to the levels which would otherwise have prevailed, means (other things equal) that the general level of anticipations will be raised, and hence that a certain volume of additional net new investment will become attractive. This latter proposition requires that attention be paid to those "secondary" effects, of increased income on anticipations and hence again on income itself, which we deliberately ignored at most

points in the preceding chapter. A complete appraisal of the multiplier concept makes it necessary to refer to them here.[1]

It may be granted that for any modern society taken as a whole, the marginal propensity to *consume* is virtually always less than 1—unless just after severe depressions, when an increase in income may at first produce a nearly equal increase in consumption to make good depression-period deficiencies or postponements (or even a more than equal increase). But it is certainly not true, either all or most of the time, that *all* of any non-consumed parts of the increments to subsequent income which are produced by an original act of net new investment will be *hoarded.* Private investment opportunities, which we shall discuss in a later chapter, may well fail to be sufficiently attractive in a "mature" modern economy to induce the investment of all of this non-consumed part. But they are clearly not so completely deficient, on the average, as the "dynamic" interpretation of Keynes's analysis implies. The moment we allow any part of the non-consumed increments of income to be spent on further new investment, however, the numerical value and even the logical significance of the Keynesian multiplier become uncertain, so far as Keynes's own argument goes. For if any of the non-consumed part of the increments is spent on further new investment, the numerical value of the multiplier cannot be predicted from the marginal propensity to consume alone and indeed has no definite relation to it. At the limit, if *all* of the non-consumed part of the increments is spent on investment, the numerical value of the "dynamic" multiplier, as Keynes defines it, really becomes $1/(1-1)$, or infinity.[2]

[1] If the original net new investment was a government operation financed by taxes falling wholly on hoards, however, with no increase in the money stock, then in the absence of other changes the hoarders will rebuild their hoards as rapidly as possible, and the various "secondary" effects accompanying or following the new investment will at best be small and brief.

[2] The Keynesian multiplier analysis is also faulty in that it assumes that the *only* "original" source of an increase in employment and income must be new investment. As shown in earlier chapters, consumption too can increase independently

To summarize these propositions, then, on the "static" interpretation the Keynesian multiplier analysis is correct, but is useless for dynamic analysis. On the "dynamic" interpretation, when taken as a causal description of the effects of processes, it is useful but is faulty because incomplete.

The Keynesian form of the multiplier analysis is also defective in another respect, and one which from the point of view of internal logic is even more serious. Keynes argues (I omit his subscripts, which transform the variables into terms of wage units) that if I is an increment of investment, then ΔY equals $k\Delta I$ where $(1 - 1/k)$ equals dC/dY, the latter being the expression for the marginal propensity to consume.[1] Now this is tantamount to assuming that $\Delta C/\Delta Y$ equals dC/dY. The latter relation holds true, however, only when $\Delta C/\Delta Y$ is constant. Hence the Keynesian multiplier is unambiguous and indeed is rigorously correct only when the marginal propensity to consume is constant. Even if the latter condition is not met, it is true, the Keynesian multiplier is *almost* correct with respect to small changes in income and becomes more nearly correct the smaller the change. The multiplier concept is usually applied, however, in relation to fairly large changes in income, and for them it is incorrect unless the marginal propensity to consume remains constant. But there is no reason to think that the marginal propensity to consume remains constant in general, as income changes. On the contrary, there are good grounds for believing, as previously suggested, that for the economy as a whole it falls as income rises, and conversely. People in the middle- and high-income groups, in particular, presumably consume only a fraction, and a decreasing fraction, of any increases in their incomes, and conversely.[2]

---

of increases in current income, as when hoards are spent on consumption or when consumer installment buying expands. By slighting the latter, Keynes appears to neglect a not unimportant factor in business cycles.

[1] *Ibid.*, p. 115.

[2] This is true of the national income *through* time, as national income rises. It is apparently also true *at any one* time with respect to the propensities of successively higher income groups. The higher the group the lower the propensity.

We then arrive at the following position. When new investment takes place, income increases in a relative amount determined by the current multiplier. The value of the multiplier, however, is itself determined by the current value of the marginal propensity to consume, and the value of this propensity presumably varies with income—which is itself affected by the new investment. In other words, we cannot determine how great the relative change in income *will* be until we know how great it *has* been![1]

It is true that the analysis developed in the preceding chapter suffers from a not dissimilar lack of a priori definitiveness. I think its defects on this head, however, are not so grave. In the first place, it makes the character and size of the investment-income relation turn on the circular velocity v of active money and on the marginal desire to hoard. Both of these magnitudes can be estimated at least approximately on the basis of certain assumptions, and the second one can be related simply and directly to changes in anticipations. Neither is true of the marginal propensity to consume, on which Keynes's multiplier analysis hangs. In the second place, over periods which are multiples of business cycles the trend values of the average circular velocity of *circulating* money v' and of the average desire to hoard have apparently been extremely stable (except in 1930–1932). For such periods, therefore, the analysis we have provided [equations (10.2) and (10.3)] presumably has a high forecasting value under most conditions.[2] This too is not true of the Keynesian multiplier.

Finally, it is evident on reflection that the multiplier analysis, as Keynes actually uses it, applies in largest part to only one of the three principal types of situation examined in the last chapter, namely, to the situation in which antici-

---

Probably a summary expression combining these two phenomena, which are obviously intimately related, can be worked out.

On the behavior of the various types of propensities through the business cycle, also see Sec. 3, below.

[1] This conclusion was previously reached by Saulnier, *op. cit.*, p. 335.

[2] See Chap. X, Sec. 7, above.

pations are falling. This is true because, on Keynes's view, the successive increments to subsequent income produced by an original act of new investment have a finite limiting sum. The increments can have a finite limiting sum, however, only if all of the new investment spending eventually flows into hoards—that is, only if the ratio h between hoards and money stock continues to rise through time. Such a rise, as previously shown, appears in any important degree only when anticipations are falling.[1] In other words, Keynes's analysis applies primarily to the contraction phase of the business cycle alone, not to the expansion phase or to the "average" situation consisting of the relations prevailing over periods which are multiples of business-cycle periods and for which the trend of v' is usually substantially horizontal. It will be shown in the next section, however, that this shortcoming can be remedied by modifying somewhat the Keynesian formulation of the multiplier relation.

2

The principal defects of the Keynesian multiplier analysis, when interpreted dynamically, can nevertheless be avoided if we substitute for Keynes's "marginal propensity to consume" the "marginal propensity to *spend*," meaning by "spending" those expenditures of *current* income which will increase the money volume of the subsequent output of consumers' and producers' goods and services, and hence *subsequent* income. This is, in fact, the form of multiplier analysis which J. M. Clark chiefly uses.[2] If this marginal propensity to spend is less than 1, the non-spent remainder of each increment of income must be added to effective hoarding.

On this basis, the multiplier concept can be handled with confidence and can be assigned numerical values in many if

[1] The ratio h may also rise just before the peak of the cycle, when investors begin to have trouble in maintaining new investment at the previous volume (see Chaps. VIII, Sec. 3, and X, Sec. 2, above).

[2] *Op. cit.*; also see the *American Economic Review*, March, 1939.

not in all cases. These numerical values are, of course, the ones obtainable from the equations developed in the preceding chapter. For each type of situation, two values can be given. One shows the relation between the increase in income *per unit of time*, which will be produced by a given block of net additional spending (above the levels of income which would otherwise have prevailed), and the amount of the spending itself. This relation we may call the "vertical" multiplier. The other refers to the total amount of income which will be produced *through infinite time* by the new spending. This we may call the "horizontal" or "cumulative" multiplier. J. M. Clark and Keynes, on the "dynamic" interpretation, recognize only the latter relation.

If the general level of anticipations is constant, the average propensity to hoard is constant; if the money stock is increased incidentally to the making of the original new investment, additions to effective hoards cease when the previously prevailing ratio of hoards to money stock is reestablished; and the value of the vertical multiplier is $(1 - h)v$, or v', as shown by equations (10.2) and (10.3), above. The value of the horizontal or cumulative multiplier, or the sum of the increments to income through time, is here determinate only for a specified period of time, t; it is $(1 - h)vt$, or $v't$.

If the general level of anticipations is falling, the value of the cumulative multiplier (taking s as the fraction of income receipts which is spent again in ways that will increase subsequent income) is simply $1/(1 - s)$, as shown by equation (10.4). Here it is the marginal propensity to *spend* which is measured by our term s. This is the case examined by J. M. Clark[1] and is the only one for which the "dynamic" interpretation of the Keynesian multiplier, even as thus modified, yields a determinate numerical result which can be stated independently of time. As just shown, it is also the only important case to which the Keynesian form of the multiplier relation is explicitly applicable. In this case, on the other

[1] Also *cf.* Haberler, *op. cit.*, p. 232.

hand, the value of the vertical multiplier is determinate only for specified periods of time, and is indicated by equation (10.5).

Finally, if the general level of anticipations is rising, both multipliers are indeterminate, except within specified time periods (see Sec. 6 of the preceding chapter) and except for the limit imposed by the fact that hoards cannot fall below zero.[1]

A realistic and complete answer to the extremely important question which the multiplier concept poses can therefore be obtained only through use of the tools provided by a study of the flow of money payments and, in particular, of the circular velocity of money. Neither the cumulative nor the vertical "multiplier" relations, if taken in the dynamic sense, can even be conceived of intelligibly except in terms of some sort of circulation period, which is most conveniently taken as the circulation period of active money ($1/v$); and their numerical values are wholly governed by the length of this period and by the current marginal propensity to hoard as here defined—which is in turn governed by the general level of anticipations. These numerical values must hence fluctuate with the business cycle, as previously remarked.

3

There is one other corollary matter of importance which can be discussed appropriately in the present connection. This is the question of the behavior and the numerical values through time, and especially within the business cycle, of the marginal propensities to spend and to consume; that is, of the ratios between given small changes in total outlays on goods and services or in outlays on consumption and the associated small changes in income.

In any modern society taken as a whole, the marginal propensity to consume (to spend increments of income on consumption goods) is presumably always less than 1, unless

[1] That is, the limit on the vertical multiplier is here set by the circular velocity of active money, v.

just after severe depressions; this has been pointed out before. Also, *if* none of the subsequent increments to income produced by a given block of new spending is invested and *if* the general level of anticipations is falling, the value of the marginal propensity to consume determines the value of the Keynesian (cumulative) multiplier. This is true both "statically," or "by definition," as Haberler and Machlup have adequately shown,[1] and also in terms of our own preceding analysis of "dynamic" relations. Moreover, the value of the marginal propensity to consume is usually less than 1 both for increases and for decreases in income. That is, if income increases, current outlays on consumption goods usually rise, but by a less amount; and if income falls, they fall too, but again by a less amount. The latter phenomenon means that individuals dishoard in the effort to maintain consumption, as may happen in severe depressions. Finally, the known general relations between outlays on consumption and on investment through the business cycle[2] and the indirect statistical evidence on changes in effective hoarding suggest that the numerical value of the marginal propensity to consume falls as the expansion phase of the cycle progresses, and rises as the contraction deepens.

But these things are *not* true, in the main, of the marginal propensity to *spend*, that is, to spend increments of income on goods and services as a whole, whether they be consumption or investment goods. The value of this propensity can be defined as 1 minus the value of the marginal propensity to hoard such increments, for any finite increment of income.

We are here in danger of confusion in the use of terms, however, and this confusion must be cleared up. In preceding chapters, when we talked about the desire or the propensity to hoard, we had in mind the hoarding of *money*. The aver-

[1] Haberler, *op. cit.*; Machlup, *op. cit.*

[2] See especially Simon Kuznets, *National Income and Capital Formation*, 1919–1935 (1937), and his article in National Bureau of Economic Research, *Bulletin* 74, June 25, 1939.

age desire to hoard money was measured by the ratio of existing hoards Ha to the total money stock M—by the ratio h—and the incremental or marginal desire (or propensity, as the case might be) by $\Delta(Ha)/\Delta M$. We now find it convenient, however, to talk about hoarding in terms of *income*. The marginal desire or the marginal propensity to hoard income is then $\Delta(Ha)/\Delta Y$. The difficulties entailed in this definition, and also entailed by the asymmetrical behavior of the marginal relations in many cases, have already been discussed.[1] If the terms h and v are constant, the numerical value of the marginal desire to hoard increments of income is lower than that of the marginal desire to hoard increments of the money stock but moves proportionately with it. If h varies, the value of the first desire remains lower and moves in the same direction as the second desire, but not in linear proportion. Also, if the numerical value of the marginal desire is greater than that of the average desire with respect to increases in money stock or income, it is less with respect to decreases; and conversely. Similar propositions hold good with respect to the two marginal *propensities* to hoard, measured respectively in terms of money stock and of income. Confusion can likewise arise over the use of the term "increments of income." This term is frequently employed in the present connection not to describe *the absolute amount of a given change in the volume of income*, which is the strictly correct usage, but to describe *any receipt of income*, whether at the previous volume or not. The observations just made on the relation between the two measures of the propensity to hoard apply to the first meaning of "increments of income" but in strictness do not apply to the second one. With these qualifications in mind, however, we can still describe the value of the marginal propensity to spend income as 1 minus the value of the marginal propensity to hoard income. That is, if C and I are spending on consumers' goods and on investment goods, respectively, $\Delta(C + I)/\Delta Y$ equals $1 - [\Delta(Ha)/\Delta Y]$.

[1] In Chap. X, Secs. 2 and 3; also see the end of Sec. 7 therein.

We may now return to an examination of these marginal propensities, as thus defined, through the business cycle.

In the expansion phase of the cycle, when anticipations are rising, the marginal propensity to hoard income is, in general, declining with respect to increases in income. At the start of the recovery, people will rebuild their money hoards to what is currently thought to be a desirable level, but thereafter hoards are more likely to fall in relative size than to increase. If the money stock is enlarged, hoards will also be increased until that average proportion to the money stock which is currently desired is substantially re-established (the ratio h). But h itself falls as the expansion goes on. In general, after the expansion is well under way, people hoard little or none of any current *increases* in income but spend all of them either on consumption or, increasingly, on investment. That is, the marginal propensity to spend is substantially equal to 1 with respect to increases in income. If income falls temporarily in the course of the general expansion, however, without affecting anticipations adversely, this marginal propensity to spend will usually be much *less* than 1 with respect to such decreases in income. If such a decrease occurs here, individuals, in order to maintain their current levels of consumption and their current programs of investment, will usually dishoard on a substantial scale (since their general anticipations are still rising, by hypothesis), in the expectation that income will presently increase again. That is, they will here fail to reduce their total current expenditures on goods and services by the amount of the current decrease in their incomes.

In the contraction phase, when the general level of anticipations is falling, effective hoarding is increasing. This in itself means that both spending and hence income are falling. Moreover, in the earlier phases of contraction, and so far as individuals have any elbowroom above what they currently regard as minimum consumption needs, a drop in income will usually produce an almost equal drop in spending. Consumption falls somewhat; investment falls heavily, and probably

by more than the decline in income. The marginal propensity to spend is therefore substantially equal to 1 here, with respect to decreases in income. If income rises temporarily in the course of the general contraction, however (without affecting anticipations favorably), spending is not likely to expand anything like equally. Hence the marginal propensity to spend is here *less* than 1 with respect to increases in income. As the contraction goes on, and especially if it develops into deep depression, investment dwindles to small quantities; but because of the low level of incomes, little can be added to hoards. Here, while anticipations continue to fall, the marginal propensity to spend probably approximates 1 with respect to both increases and decreases in income.

Finally, if the general level of anticipations is constant, the marginal propensity to spend is less than 1 with respect to both increases and decreases in income. That is, a movement of income in either direction, away from the short-period quasi-equilibrium volume of income corresponding to the current general level of anticipations, will produce a less than equal change in spending and hence is self-corrective.[1] It must be strongly emphasized, however, that it is not the fact that the current value of the marginal propensity to spend is at one particular level rather than another which "determines" this quasi-equilibrium volume of income. Rather, it is the fact that this value remains *constant*, at *any* figure which is less than 1, that provides the immediate mechanism by which the quasi-equilibrium is maintained. Both the quasi-equilibrium and the current value of the marginal propensity result from the fact that the general level of anticipations is constant.

To generalize rather broadly, then, when the general level of anticipations is changing, the marginal propensity to

[1] It will be recalled that in terms of the equations of Chaps. VII and VIII, a constant level of anticipations is consistent with a changing volume of income, provided the latter change be at a constant *rate;* but that because of the effects of increased hoarding or dishoarding, a continued rise or fall in income cannot be maintained indefinitely if anticipations remain constant (Chap. VIII, Sec. 3; compare Chap. X, Sec. 3).

spend is substantially equal to 1 with respect to that direction of change in income which corresponds to the current movement in the general level of anticipations; it is less than 1 with respect to the *opposite* direction of change in income; and it is also less than 1, with respect to income changes in *both* directions, when anticipations are constant. The propensity hence cannot be given even a conceptual numerical value until we know about the current level of anticipations and its changes.

Comparable propositions hold with respect to the marginal propensity to *hoard* income, which is likewise governed by the general level of anticipations and (inversely) by their changes. These relations were examined at an earlier point[1] and need be only summarized here. If anticipations are constant, the marginal propensity to hoard income is less than 1 with respect to income changes in both directions, and is numerically equal to the *average* propensity to hoard. Part of any increase in income will be effectively hoarded, and conversely. If anticipations are rising or falling, the marginal propensity to hoard income is still less than 1 (except at the limits, when it is zero or 1); but it is smaller than the current *average* propensity with respect to income changes that are in the same direction as the current changes in anticipations, and conversely.

This is all, of course, only one way of saying that changes in the marginal propensities to spend and to hoard income are merely a part of the mechanism by which changes in general activity work out. So far as the latter changes are cyclical in character, changes in the marginal propensities to spend and to hoard must also be cyclical. The importance of the marginal propensities to spend, hoard and consume has hence been somewhat exaggerated in recent discussion. The element of crucial importance, rather, is changes in the general level of anticipations and their causes; it is these changes which, in turn, govern the marginal propensities.

[1] Also see the discussion of the parallel behavior of the marginal desire or propensity to hoard increments to the stock of money, in Chap. X, Secs. 2 and 3, above.

For example, as just remarked, the fact that at a given time the marginal propensity to spend is constant and less than 1 with respect to income changes in both directions does not "determine" a short-period quasi-equilibrium volume of output or income. This value of the marginal propensity, on the contrary, is merely one result of the antecedent fact that the general level of anticipations *is* currently constant and that corresponding to this constant level of anticipations, therefore, there *is* a short-period quasi-equilibrium volume of output and income (which is not true when anticipations themselves are changing). The reasons why this equilibrium volume is *either* high or low in the given case, and why it may hence be one occurring at any volume of employment, cannot be found in the current value of the marginal propensity to spend. They must be sought in the determinants of changes in anticipations themselves, already discussed, and in the state of those investment opportunities and other "exogenous" factors which will be examined in Chaps. XII and XIII, below.

Similarly, it may be remarked again that the value of the marginal propensity to *consume* presumably moves inversely with business cycles, as a rule. The fact that it is less than 1 at any time, however, again does not "determine" a state of quasi-equilibrium at either a high or a low volume of output and income. In given circumstances, either a high or a low value of this propensity may be consistent with either a high or a low volume of output and income.

The propositions in the present section have been stated, for convenience and brevity, in terms only of the relation between *individual* spending and *individual* income receipts. But substantially similar propositions also hold true of the relation between *business* spending and receipts. Much the same factors govern business decisions to spend or not to spend current receipts as govern individual decisions to spend or not to spend above what the individual regards as his minimal level of consumption, though they may affect the two groups at different times and even, temporarily, in

different directions. These factors can be summarized under the heading of the general level of anticipations.

4

In the analysis of the quantitative relations between spending and subsequent income developed in the preceding chapter, we have made use of nine major categories: money income, consumption, investment, the stock of active money, its circular or income velocity, effective hoarding, the marginal and the average desires to hoard, and the general level of anticipations. In that and earlier chapters, we have endeavored to depict the interacting relations between these categories and to show that their interactions constitute, "exogenous" factors of change apart, business cycles. Particularly in the preceding chapter, we have also endeavored to relate the uses made of receipts of money income to changes in the general level of anticipations, and hence to make the causes and effects of *changes* in the size of the flow of money incomes an integral part of our business-cycle analysis. Since one major effect of a change in the general level of anticipations is to change the proportion of their current income receipts which people spend (whether on consumption or on new investment), we have necessarily assigned an extremely important role to changes in the effective hoarding of money.

We have made no use at all, however, of one other category which was almost universal in the discussions of earlier generations. This is the category of "saving." The recent controversies over the relation between saving and investment make it desirable to say something about the place of saving in our own schema, and indeed the preceding discussion of the multiplier contains implications about this definitional problem which we are virtually compelled to make more explicit.

If we are to use the category of "saving" at all, we should have to define it in substantially the "ordinary" or (nearly) "Robertsonian" way, namely, as that part of any block of

income receipts which is *not* spent by the recipient, within some appropriately defined subsequent period, on consumption. Then saving consists of all current income receipts which are spent currently on new investment, plus all such receipts which are not spent on commodities or services at all but are used to increase effective hoarding, *He*, as that term was previously defined. "Effective hoarding" includes not only additions to actual hoards but also decreases in the money stock, as when bank loans are repaid; and conversely for effective dishoarding. The value of new investment equals, analogously, the amount of all current income receipts spent on investment, plus any sums spent on new investment which are obtained by effective dishoarding, either through the utilization of previously idle money balances or by the creation of new money itself. Hence if new saving is S and if the change in effective hoarding, ΔHe, is actually positive or negative as the case may be, we have[1]

$$S = I + \Delta(He). \qquad (11.1)$$

Now money income is defined as virtually equal to the value of output,[2] and can hence be derived only from the production of consumption and investment goods. But money income once received can be utilized either to buy consumption or investment goods or to increase effective hoarding. So far as income received is spent again on goods, it flows through the production-and-exchange processes and in due course gives rise to a second batch of income receipts, in ways already examined; and so on indefinitely. It is obvious, however, that the consumption and investment

[1] In my earlier paper on "The General Dynamics of Money," *Journal of Political Economy*, June, 1937, in which special attention was paid to transition-period leads and lags, it was found convenient to distinguish between hoarding by individuals out of current money income received and hoarding by business firms out of current business receipts (and also the converse of these operations). A more complex set of symbols was hence used than is necessary in the present study. In that paper (*cf.* p. 330), the term $(\Delta B - \Delta M)$ equals the present $\Delta(He)$, and the term $(S - DS + H - DH)$ equals the present S. The term Z in that paper is the amount of an "original" change in *consumer* spending.

[2] But it may not be quite equal (see Appendix IV, below).

goods from which a given block of money income is derived are not and cannot be the same as the goods on which this block of income is spent. To depict the actual changing flow of money-income payments through time, and thus permit a dynamic construction, a time factor must therefore be introduced. Let us first take, as the unit time period, a period so short that no income received from the production of goods and services in that period can possibly be spent again in the same period. Then in the next following period, this income may be used in part to buy other consumption and investment goods, thus giving rise to a second block of income receipts in the second period, but it may likewise be used in part to increase effective hoarding. It may also be supplemented by effective dishoarding, either through the spending of previously idle balances or through the creation of new money. If there is a net increase in effective hoarding, the income of the second period (if v remains constant) must clearly be less than the income of the first period, and less by the amount of the net increase itself (or conversely, will be greater by the amount of any net effective dishoarding). That is (subscripts refer to time),

$$Y_t = C_t + I_t, \tag{11.2}$$

$$Y_t = C_{t+1} + I_{t+1} + {}_t\Delta_{t+1}(He), \tag{11.3}$$

$$Y_{t+1} = C_{t+1} + I_{t+1}, \tag{11.4}$$

and so on. Or

$$Y_t = Y_{t+1} + {}_t\Delta_{t+1}(He). \tag{11.5}$$

This last equation can be expressed more generally for unit time periods of any length. Let the average circular velocity of active money in such a period again be v, and again assume it to be constant. Then the general expression is as follows (changes in effective hoarding which take place after the start of the second period must be weighted inversely with their time distance from the start of this period):

$$Y_t = Y_{t+1} + [{}_t\Delta_{t+1}(He)]v. \tag{11.6}$$

This expression is valid for the relation between the income of any period and the next and is capable of rough statistical substitution.[1]

These last equations, however, contain no term for "saving." In the first part of the present section, we defined saving in the ordinary way, to include changes in effective hoarding. A change in hoarding is something that takes place *through* time. The definition of saving must therefore be set up in parallel fashion. Also, on any definition, saving must remain equal to income minus consumption. Let us therefore treat as a single entity the period t and the period $(t + 1)$. From equations (11.2) and (11.3), we then get

$$S_t + S_{t+1} = I_t + I_{t+1} + {}_t\Delta_{t+1}(He). \qquad (11.8)$$

The general form of this expression is, of course, equation (11.1) previously presented.

5

Keynes defines the relations involved in a different way. In his formulation, which omits all dates, he says simply this:

$$Y = C + I, \qquad (11.9)$$
$$S = Y - C; \qquad (11.10)$$

therefore,

$$S = I. \qquad (11.11)$$

This result is different from ours, yet it is equally valid. The difference turns, in the first instance, on the treatment of changes in effective hoarding. Keynes omits these changes

[1] See Appendix II, below. The value of ΔHe is $(M_0 - M_1) + (Ha_1 - Ha_0)$. Since the estimates in the Appendix are rounded, the numerical results from substitution are not precise. Nor does the substitution here give an independent test, since the data in the Appendix are estimates obtained by use of the same equations as those from which equation (11.6), above, is derived.

If v varies between one period and the next, the incomes of the two periods will not be equal even if there is no change in effective hoarding. The simplest way to combine the two changes, if v can be determined independently, is to replace equation (11.6) with the following (tautological) expression:

$$Y_t = Y_{t+1} - {}_t\Delta_{t+1}[M(1 - h)v] = Y_{t+1} - {}_t\Delta_{t+1}(Mv'). \qquad (11.7)$$

from his definition of "saving," whereas we have included them.[1] It follows further that the relation between consumption, investment and income which Keynes presents in these equations is *the relation between income and the activities from which it is received*—namely, consumption and investment. That is, he is talking about the *sources* of current income. In our own equations above, however, we have been talking both about the sources of income and about the *uses* to which income receipts are put *within given periods*. Our equations therefore show the relation between income, on the one hand, and, on the other hand, not only consumption and investment but also changes in effective hoarding.[2]

A great deal of unnecessary discussion has been devoted to Keynes's conclusion, paradoxical at first sight, that saving *always* equals investment. The proposition is obviously correct on Keynes's definition of saving, yet our substantially different conclusion—that saving need *not* be equal to investment—is also correct on our own definition of saving. The question to ask, therefore, is not which conclusion is correct, for both are formally valid, but which is more nearly "realistic," and especially which is more helpful for purposes of analysis and policy formation.

I think that the definitions and conclusions we have set up are somewhat more realistic than Keynes's and somewhat more helpful. People will go on effectively hoarding and dishoarding anyway, regardless of whether or not the resulting changes in absolute hoards and in money stock are counted as "savings"; these operations, as shown in earlier chapters, play an important role in the processes by which cyclical

[1] On Keynes's view, the only way in which a society can really "save" is by producing something other than consumption goods—that is, by producing investment goods. Hence saving always and necessarily equals investment; saving *is* investment and nothing else. If some people hoard money, other people's incomes fall, because the flow of spending and hence of income production is diminished, but the hoarding is not "saving" in any true sense. The society actually has less wealth than before, instead of more. Money hoarding is therefore treated as irrelevant in this part of Keynes's analysis and does not figure in his equations here.

[2] Note that if the time period held in mind is too short for any current income receipts to be respent, the two sets of definitions and equations become identical.

and other changes in income and general economic activity are brought about; they are operations on which a certain amount of direct statistical evidence is currently obtainable; and it therefore seems better to set up our system of definitions and equations in a way that will both make full use of this statistical evidence and keep the phenomena involved in the forefront of attention. It is also desirable, where possible, to stick to definitions that correspond fairly well to popular usage—as Keynes's definition does not. There are, obviously, certain advantages in confining attention to the *sources* of income alone, and from this point of view, saving is necessarily equal to investment. But then why bother to talk about "saving" at all—and thus, by giving the term a peculiar meaning, muddy an already complicated problem? Finally, with respect to economic policy formation, the outstanding problem of recent years has been the deficiency of private spending and the corollary excess of private hoarding. A set of definitions which deliberately puts hoarding into the background hence leaves much to be desired. It is noteworthy that Keynes's own striking conclusions on the problems of policy depend in no way on the particular definition of saving which he adopts, and indeed cannot be derived from it. They rest, rather, on the assumption (to state it inversely) that what we have called effective hoarding is likely to be excessive in the future.

The whole question of the definition of saving, however, and of the equality or inequality of saving and investment is really not of great importance. It bears only on the internal consistency of particular sets of definitions and analyses. We have been able to get on quite well without the category of "saving" to this point in the present study and shall continue to do so.[1] Indeed, because of these differences in present

[1] Note that the concept of "forced" saving is ambiguous except at full employment, and even here it is usually better to speak of changes in prices, real income and the direction of production. The concept of "dissaving" is ambiguous under any circumstances, unless taken to mean a decrease in effective hoarding. Reasons for not utilizing the concept of "disinvestment" were given at the end of Chap. II, Sec. 3, above.

usage and the resulting confusions, it might be better to drop the term "saving" entirely from the economic vocabulary. Its place would then be taken by the two categories of "investment" and, with respect to income receipts which are neither consumed nor invested, "changes in effective hoarding."

Chapter XII

GOVERNMENT SPENDING AND BUSINESS CYCLES

I

THE prime conclusion of the preceding chapters is that in individual-capitalistic economies and in the absence of governmental or central-bank intervention, the interrelations between changes in income and changes in the general level of private anticipations are such that they necessarily produce an endless series of self-generating cyclical fluctuations in the total money volume of economic activity. These are the fluctuations described as business cycles, so far as actual business cycles are self-generating. The preceding chapters themselves were devoted to working out the internal dynamics of the self-generating business-cycle process and to making estimates of certain of the quantitative relations involved.

Granted that business cycles are inevitable in the absence of intervention, what can be done about them? Can they be reduced in severity by deliberate action or even eliminated; if so, by what measures; and what are the limitations and the prospects for success of the various practical programs that have hitherto been undertaken or proposed?

A wide range of policies and specific measures have been tried out in this and other countries in the past, none with complete success. In this country, the chief measures used in recent years have included such things as central-bank discount-rate manipulations, open-market operations, and the regulation of the foreign exchanges and international gold flows, which are the traditional instruments of control; the granting of loans and direct or indirect subsidies to particular

groups and activities; the direct or indirect imposition (as in the case of agriculture and the National Recovery Act) of controls over prices and business practices; regulation of wages and hours of employment; regulation of the security and commodity markets; endeavors to persuade or coerce business men and other investors to alter the current scale of their activities; changes in the quantity of currency; changes in the rates and even the structure of taxation; and finally, changes in the relation between the current receipts and the current expenditures of government bodies, with a view to influencing the current volume of employment and income directly and hence the current volume of general economic activity.

In the present chapter, we shall be concerned primarily with only the last one of the measures of intervention listed above, alteration of the current relation between government receipts and expenditures—that is, briefly, positive or negative changes in net government spending. We shall first recapitulate the conclusions reached in Chaps. IX, X and XI with respect to the relation between the general level or state of anticipations and the effect of new spending on income, then review the recent history of the United States in the light of our analytical propositions, and finally, indicate the further conclusions as to policy which this review suggests.

2

Deliberate changes in the current volume of net government spending may be rationally inaugurated at almost any point in the business cycle, as part of a program for the alleviation and control of the self-generating cyclical fluctuations themselves. The general character and direction of the changes which would be desirable are self-evident. But these measures, which are so easy to plot out on paper, are by no means certain to be effective. Their effectiveness depends on the general state of private anticipations at the time and on the influence the measures themselves have on the subse-

quent movements of anticipations. They clearly all rest on the assumption, often not explicitly stated, that private anticipations will be altered in a direction consistent with the specific steps taken by the government, or at least will not shift in the opposite direction. If anticipations actually do behave in the expected way, the government's measures will seem successful; if not, they must fail more or less completely.

The vital part played by anticipations can be made clear by examining the effects which net government spending may be expected to have in each of the three principal alternative types of situation, namely, when anticipations are constant, falling or rising. In considering these cases, we shall now take it for granted that the volume of net government spending (whether positive or negative) is large enough to alter income materially, other things equal, and hence to influence anticipations. For convenience, we shall also suppose again that any *net* spending (any excess of current government outlays over receipts) is effected by the creation of additional new money, thus producing an equal change in the money stock, and conversely.

First, suppose that the general level of private anticipations is constant, but very low. This is the situation at or just before the bottom of the contraction phase of the cycle. Then the average propensity to hoard is constant and high; the marginal propensity is equal to the average propensity and hence less than 1; the ratio h is constant and relatively high; and the average circular velocity of circulating money, v', is relatively low. The national money income is also constant and low.

If net new government deficit spending of amount I is undertaken in this situation, thus increasing the money stock (under the conditions here assumed) by the same amount I, and if all other things remain equal, the spending will raise the national money income by the amount $v'I$ per year above the level which would otherwise have prevailed. This higher level will be reached at the end of the first

following circulation period of active money, $1/v$. Under present conditions, this means perhaps 3 to 4 months. The higher level of income will be maintained thereafter, other things equal, since anticipations and hence the desire to hoard are constant [equation (10.3) in Chap. X]. The possibility of a change in v may be ignored here.

It is evidently quite possible that this government-induced increase in the national money income will start or accelerate a process of self-generating cyclical recovery, of the sort described in earlier chapters. This is, indeed, the hope and belief of the "pump-priming" school. But everything depends, clearly, on the effect of the government spending on the general level of anticipations. If investors and others look *only* at the increase in income which the new spending initially produces, anticipations will be stimulated, new private investment will pick up, and presently a true cyclical recovery will be under way. But if investors think that the government spending will presently cease, or that it will produce injurious consequences in other directions, the general level of anticipations may remain unchanged. Then consumption and income will expand as long as net deficit spending expands, other things equal, and will remain at the new higher level, or near it, as long as the original volume of net deficit spending per unit time period is maintained. *Private* new investment will also increase somewhat, in the minimal amount necessary to provide additional consumption goods for the demand actually in sight. But the self-generating process previously described, which runs from changes in income to the general level of anticipations to investment and back to income, will remain almost wholly inoperative. If the government later ceases its net deficit spending, then consumption, income and private new investment will all drop back to their previous depression levels. In terms of Diagrams V and VI, the history of the whole endeavor in this case will be simply a horizontal movement of the points I_1, R_1 and H_1 to the right and then back again. Finally, if the effect of the new government spending is to

lower the general level of anticipations seriously, privately generated income will decline still farther. The fall may even offset the rise in other income produced by the government spending itself, as will now be shown.

3

Second, suppose that the deficit financing is inaugurated in a period of sharp business recession. Then anticipations are already falling rapidly, and the average propensity to hoard (measured by the ratio h) is rising. In other words, of each block of current income receipts some fairly substantial proportion is being effectively hoarded, and the fraction s, which is spent again on goods or services, is well below 1 [equations (10.4) and (10.6) in Chap. X]. That is, the marginal propensity to spend is relatively low, and the marginal propensity to hoard is relatively high, with respect to current increases in income.[1] The latter propensity is likely to be especially high with respect to the new government spending, if the resulting new income is first received by those who are not compelled to spend all of it on current consumption, as is the case with most receivers of dividends. As pointed out previously, this latter consideration suggests that WPA and relief outlays are better than heavy public works and the like.

At a time such as this, any attempt by the government to raise the national money income by net additional spending and thus to end the depression must at first appear to be like the classical labors of Sisyphus. If the government spends a single sum I at a given time, it will thereby, of course, raise national income nearly I dollars by the end of the first following period of circulation of active money, $1/v$. But in the second period, only sI dollars (at the most) of this increase in income will be spent again on goods or services; in the third, only s^2I dollars, and so on. That is, the effect on income becomes smaller and smaller as more and more of the original new spending I is drawn into effective hoarding and

[1] Compare Chaps. X, Secs. 3 and 5, and XI, Sec. 3.

is used either to increase absolute money hoards, or to repay bank loans and thus decrease the money supply. Meanwhile the national income generated by purely *private* spending is also shrinking steadily, precisely because the average propensity to hoard is rising steadily. Depending on the current size of the fraction s and on the relative volume of the new spending I, the government may find that within a few months or even weeks after its action was taken, the absolute level of the national income is actually lower than it was before the spending was begun.

If the government now engages in another block of additional spending I' and if anticipations continue to fall, substantially the same process will repeat itself. The effects on income produced by the second block of spending I' will be supplemented by the remaining effects of the first block I; but if the average propensity to hoard is rising at all rapidly, the gain to absolute income from this cumulation will again become negligible quite quickly. So also for any subsequent increments to net government spending.

To summarize, then, when private anticipations are falling and the average propensity to hoard hence rising, the national money income obtained from private activities is declining. *Merely to maintain total income constant at any given level in this situation, the government must therefore not only spend continuously in excess of its current receipts but spend in excess at an increasing rate,* as long as private anticipations continue to fall.[1] If the government desires to *raise* the absolute level of income in this situation, *it must spend in excess of receipts at an even more rapidly increasing rate.*

The size of the additional doses of spending which will be required to keep income at a given constant level can be approximated as follows, at least conceptually. The doses

[1] Note, however, that the first effect of any substantial *increase* in the current rate of deficit spending will be to produce an absolute though temporary increase in income. Only after some months or more will the bulk of any given increase usually begin to be absorbed into increases in effective hoarding, thus reducing absolute income again.

required to keep income higher than it would *otherwise* have been, by a given amount per year, depend on the proportion of current income receipts which is being effectively hoarded, or $(1 - s)$, and on the circulation period of active money, $1/v$. This relation was examined in Chap. X, Sec. 5, above. It was there shown that if we take the length of the circulation period as 3 months and take s at 0.80, and if we assume that the government continues to spend an amount I dollars in excess of receipts every 3 months, indefinitely, the government will raise national income to a level which at the limit is $5I$ dollars per year higher than the level which would *otherwise* have prevailed.[1] But since anticipations are themselves falling, privately generated income is also falling. In order to hold national income as a whole constant in absolute terms, the government must therefore spend *increasingly more than I dollars* per circulation period—increasingly more, because although each increase in the rate of net spending will raise income higher than it would *otherwise* have been, privately generated income (under the conditions here supposed) itself continues to fall. If the latter fall persists to its limit, which is zero, the government will have to increase its net spending until this spending is the source of *all* income. More concretely, if privately generated income is falling by an amount ΔY per year, then in each circulation period of active money the government, in order to keep total income constant, will have to *increase* its net spending by $\Delta Y/v$ dollars above its net spending in the preceding period!

The order of magnitude of such operations in an era of sharp and prolonged contraction can be illustrated from the history of the United States after 1929. In the period 1930–1932, and on the assumption that the fall in private anticipations would not have been stopped by the government's

[1] $1/(1 - 0.80)$ equals 5. The value of $(1 - s)$ is the value of the current marginal propensity to hoard. This value, as previously shown, moves in the same direction as the value of the average desire to hoard, which is measured by the ratio h between hoards and money stock, when income is declining, but cannot be calculated from it in advance.

action, net government spending at an *average* rate for the 3 years of 4.5 billion dollars a year would have been required, in order to hold national income constant at the 1929 level.[1] Actually, of course, less than this amount would have been needed in the early part of the period, but more in the later part; the deficiency of privately generated income was becoming steadily larger.

These perhaps startling conclusions hold true, of course, only as long as the general level of anticipations does continue to fall. It is entirely possible, on the other hand, that the net government spending will itself arrest and even reverse the fall in anticipations. This is what pump-priming advocates hope for, and is the inference obviously suggested by the argument in Chaps. VII and VIII, above. The spending does increase income relative to the lower levels which income would otherwise have reached, at least for the time being; it therefore retards, for the time being, the current rate of fall in aggregate income itself; and *if* all other things remain equal, in due course this retardation will itself arrest the decline in general anticipations and will therefore presently start a new self-generating upward movement. In societies which have already had successful experience with

[1] The actual drop in income payments per year, between the end of 1929 and the end of 1932, was roughly 35 billion dollars, or 11.7 billions a year. The average annual circular velocity of *circulating* money, v', for the three years 1930–1932, inclusive, was 2.59. Disregarding transitional lags and using merely straight-line averaging, the government would therefore have had to engage, on the average, in net additional spending of 4.5 billions each year (11.7/2.59), in order to hold income at the 1929 level. This calculation is rough, of course, and includes no allowance for the excess of government deficit spending in 1930–1932 over the average of preceding years.

The average annual income for the 3 years 1930–1932 together was about 62 billions, and the average decline in income per year (ΔY) was hence 19 per cent of income. Per circulation period of *active* money and taking v as 3.4 per year, the decline was 5.5 per cent. This suggests an average value of s, per circulation period, of 94.5 per cent [see equation (10.4) in Chap. X, above]. But this value is obtained, of course, by straight-line averaging, whereas the equations used in Chap. X require a compound-interest procedure. On the latter basis, the value of s would be substantially lower. Even so, however, the illustrative value of s used in the text above, of 0.80, is presumably too low except for brief periods of panic.

governmental deficit-financing policies, and provided the program is so carried out as to command the approval and support of the business and financial communities, this happy result may well be obtained. Then the general depression will soon be halted; recovery will be started; and the pump priming will be judged to have been eminently successful. The recent history of other countries provides several illustrations of this favorable development.

But other things may not remain equal. Private investors and others may conclude that the injuries done by net government spending—for example, the apparent impairment of the government's own financial position produced by its steadily mounting volume of debt, or the increases in future tax burdens which seem likely to be required in order to pay for present deficit financing, or interferences or competition with private business accompanying the spending program—are likely to exceed the benefits. In that event, the net effect of the additional government spending may actually be to accelerate the current fall in anticipations for a time, instead of retarding it, and thus to make the current business recession even sharper than before. At best, in these circumstances, the net spending at first only prevents the fall in total national income from being as severe as it would *otherwise* have been, and is wholly ineffective in starting any immediate self-generating cyclical revival. If the spending is continued in sufficient volume, however, the desired results will eventually appear. Even if the spending program does not itself influence private anticipations favorably, the self-generating contraction will eventually run its course; and thereafter, with private anticipations low but at least not falling, each increase in net government spending will raise income to enduringly higher levels.

4

Third, if the net government spending takes place when anticipations are already rising, it is likely to produce what will look like a more than equivalent effect upon total income,

because the direct expansion of income which it brings about itself will be augmented by other and independently originated income-expanding activities on the part of private firms and individuals. But this is also a time, obviously, when business recovery is already under way and in which net government spending is hence most unlikely to increase. Rather, the current volume of such spending is likely to be reduced and even to give way to a net excess of current receipts over expenditures. By a precise reversal of the process just described, income and anticipations will then fail to *rise* as much as they otherwise would have. That is, the recovery will be slowed down and may even be stopped.

The preceding examination of the three principal types of situation thus shows that no simple and unequivocal a priori answer can be given to the question of what effects will be produced on business activity and national income by a program of net government spending, which is undertaken to halt business recession or depression and to start a recovery. The answer depends both on the point in the current business cycle at which the action is taken, and on the repercussions of the action on the general level of private anticipations. The latter repercussions depend, in turn, both on the quantitative scope and method of the spending program and on the previous experience and traditions of the economy. They are hence difficult to forecast. Moreover, even under the most favorable circumstances, a substantial interval of time must usually elapse before the effect of the spending on the absolute levels of income and business activity can become very marked. The results are likely to be disappointingly small at first, precisely because, under our present general policy, substantial increases in net spending are ordinarily not started until the average propensity to hoard is high and rising relatively sharply—that is, until business contraction has already gone a substantial distance. If the program of spending is continued in sufficient volume, however, there is little doubt that it must eventually increase income in absolute terms. How great the increase will be in the given

case, and how long it will last if the net spending is subsequently tapered off, depend on the factors discussed in the preceding pages.

Broadly analogous conclusions apply to central-bank interventions, of which the success again depends largely on the influence of the intervention on the general level of anticipations. If the central bank desires to arrest a boom and hence forces up market interest rates, the action may have little immediate effect. But if it is believed that the central bank "means business" and that it has the necessary power, the general level of anticipations of investors and others will be driven down; and if nothing intervenes, a cyclical contraction will soon get started. Analogously, open-market sales both move the supply curve for new investment funds to the left and reduce its elasticity (Diagram I), and thus operate on anticipations both directly and by decreasing income. In the slump, on the other hand, the central bank is almost helpless (Diagram II). Here dropping market interest rates even to zero can hardly raise the investment demand curve enough to stimulate much new investment immediately, and does little to raise anticipations. Similarly, here open-market purchases merely increase the size of money hoards (as from R_1-H_1 to R_1-H_2 in Diagram VI; compare Diagram II), leaving income and hence anticipations unchanged, though they also make possible a quicker recovery when once anticipations have started to rise for some other reason.

5

This analysis of the general character of the effects of government deficit spending on employment and national income in the three principal types of situation provides much of the explanation of the otherwise puzzling relations between these factors in the United States, in recent years.

The total volume of governmental deficit spending in this country, since the beginning of the great depression in 1929–1930, has consisted of two quite different components.

Federal deficit spending, undertaken partly to meet current governmental running expenses and relief but partly in a conscious effort to check business recession and start recovery, first became important in the latter part of 1930, and since then has never wholly ceased. Deficit spending by the aggregate of the state and local governments, on the other hand, was important in the first years of the depression but was incurred to meet current running expenses and relief rather than as part of a program to stimulate business recovery, and has been comparatively small since 1932.[1] The total net volume of deficit spending by all government bodies was hardly half a billion dollars in 1929 and barely a billion in 1930. We shall therefore begin with 1931, when it first exceeded 2 billions. It may be stressed that by "deficit spending" we shall hereafter mean not necessarily a *budgetary* deficit but an excess of those government expenditures which may be expected to increase current individual income over those revenues, payment of which to the government may be expected to *decrease* current income-producing expenditure by firms and individuals.

The course of government deficit spending since 1931 shows four different periods. In 1931, 1932 and to the end of 1933, the volume of Federal deficit spending alone stayed fairly stable at an average of roughly 1,800 million dollars a year, or 160 million dollars a month; but because of the rapid shrinkage of state and local deficit spending, the total for all government bodies declined somewhat. Then total deficit spending shot up to a higher level and, from the beginning of 1934 to the end of 1936, averaged roughly 3,600 million dollars a year or 300 million dollars a month. If that part of the proceeds of Veterans' Adjusted Service Certificates which is estimated to have been spent promptly in

[1] Estimates of net Federal income-increasing spending alone have been prepared, in preliminary unpublished form, by the Board of Governors of the Federal Reserve system. Estimates for the total of all government bodies are presented in a volume by Henry H. Villard, which has just been published, on *Deficit Spending and the National Income*. The figures given below are Villard's (also see Appendix III, below).

income-increasing ways is subtracted, these latter figures fall to roughly 3,300 and 275 million dollars, respectively. In 1937, beginning with January, the total volume of net deficit spending was cut violently and rapidly to only 806 million dollars for the year, or an average of only 67 million dollars a month. Then a new increase began in March, 1938, and from the summer of 1938 to near the end of 1940 the level was fairly stable at a little under 300 million dollars a month, or say 3,500 million dollars a year.

If we compare these changes with the data on industrial production, factory employment, commodity prices, national income and the like in the same periods, it is immediately obvious that no simple and uniformly maintained relation can be established between Federal deficit spending and changes in business activity or national income. This is perhaps the more easily understood, because the spending has hitherto been on a *relatively* limited scale. Even in the years when it was highest, 1934–1936, it averaged only 6 per cent of the annual national income. On the other hand, it would be quite erroneous to take a wholly agnostic view and deny any relation at all. In at least one of the four periods just listed, the prima-facie evidence suggests a very close relation indeed. To form a more accurate judgment, it is therefore necessary to examine the periods separately, as follows.

The business recovery of mid-1933 was probably neither a response to this deficit spending of 1931–1933, nor the beginning of a "normal" self-generating cyclical upswing like those described in earlier chapters. Rather, it was in part due to the monetary-inflation scare after March, 1933, and the resulting business boomlet; and in part to the essentially non-cyclical rebound of business activity after the partial paralysis imposed by the bank failures and suspensions of 1932 and early 1933. This does not mean that the deficit spending of this period had no effect. Its effect consisted, however, in preventing business activity and income from falling to levels as low as would *otherwise* have been reached,

other things equal, rather than in inducing any very substantial rise in absolute terms. The total government deficit spending in 1932 and 1933 taken together was 3.7 billion dollars. The average circular velocity of circulating money, v', in those years was 2.32 per year. Disregarding lags, we can therefore say that in consequence of the deficit spending national income, by the end of 1933, was at a level roughly 8.6 billion dollars higher than would *otherwise* have prevailed [equation (10.3), above]. In actuality, however, income was 14 billion dollars smaller in 1932 than in 1931 and, despite the inflation boomlet, dropped another 2.6 billion dollars in 1933. Therefore, the income-increasing effect of the deficit spending must have been much more than offset by contraction and increased effective hoarding in other spheres in 1932 and 1933. This is broadly the type of situation envisaged in the case examined in Sec. 3, above, in which general anticipations were falling and low and the average propensity to hoard hence rising and high. This conclusion is also supported by the continued low level of the velocity term v', by the appearance of excess bank reserves on a large scale and by our own preceding estimates of the changes in money hoards. The average money supply in 1933 was smaller than that in 1931 by roughly 4 billion dollars, but the *absolute* size of hoards remained virtually constant.[1] The net increase in *effective* hoarding in 1932–1933 hence also amounted to 4 billion dollars. Yet the total government deficit spending of 1932–1933, of 3.7 billion dollars, was itself financed almost entirely by the creation of additional money.[2]

The prima-facie evidence therefore indicates that in 1932–1933, government deficit spending did not do much more than fill in some of the bottom of the depression trough, and thus prevent the depression from being as severe as it would otherwise have been. It certainly did not succeed in

[1] See Appendix II.

[2] Through the sale of securities to the banks. From the end of 1931 to the end of 1933, Federal Reserve Bank and member-bank holdings of United States obligations increased by roughly 3.5 billion dollars.

stimulating any immediate absolute increase in income or in business activity which was traceable to a genuine rise in private anticipations. That is, it completely failed to have any immediate "pump-priming" effect.[1]

The situation in the next period, 1934–1936, was substantially different. First, at the end of 1933 Federal deficit spending was sharply increased and remained at much higher levels until the end of 1936; then it fell for a time to negligible proportions. The total net income-increasing spending by all government bodies for the years 1934–1936 inclusive was 10.7 billion dollars. Second, industrial production, factory employment, freight-car loadings and the like picked up in the latter part of 1934 and continued to expand until the middle of 1937. National income payments also rose quite steadily, if we ignore month-to-month fluctuations. The total income for 1936 was some 21 billion dollars and for 1937 some 25 billion dollars above that for 1933. Third, average stock-market prices[2] fell through most of 1934 but then nearly doubled between April, 1935, and March, 1937. The rise, however, was very uneven as between different groups of stocks. Finally, the average circular velocity of circulating money, v', remained almost unchanged, at about 2.22 per year, and indeed was slightly lower in 1936 than in 1933 or 1934. Since the money stock had increased very substantially between 1933 and 1936 (about 10.6 billion dollars), this meant that the absolute size of money hoards had increased greatly (roughly, by 4 billion dollars) and that even their *relative* size had increased a little.[3]

On the basis of the evidence provided by this complex array of events, it is difficult not to ascribe the recovery of 1934–1936 almost wholly to the direct effects of the Federal deficit-spending program, for the recovery showed few of the

[1] Opponents of the New Deal, however, may argue that had deficit financing not taken place (except for relief purposes) and had private enterprise therefore not become frightened, privately initiated activity would have revived much more rapidly. This contention, of course, cannot be disproved.

[2] The *Standard Statistics* combined index.

[3] See Appendix II, below.

characteristics of the "normal," self-generating, cyclical process described in earlier chapters. It then also follows, however, that the deficit-spending program, though in itself successful in the immediate sense as a recovery measure, failed completely as a pump-priming device.

These latter conclusions are drawn from the following more detailed considerations. First, as already remarked, both the circular velocity of circulating money, v', and the *relative* size of hoards remained virtually constant in 1934–1936, and indeed moved a little the wrong way. Moreover, stock prices did not begin to rise until 6 months or more *after* the revival of most of the basic indices of business activity; and although the rise was then large, it was neither much out of proportion to nor much in advance of the increases in actual business earnings. None of these types of behavior is what we should expect to find in a "normal" self-generating cyclical recovery, originating in a rise in the general average level of private anticipations of private gain. Second, reasons will be suggested in the next chapter for thinking it unlikely that private new investment, even for repairs and restocking, would have increased in this period much beyond the volumes needed to take care of orders already on the books or quite immediately in prospect, and especially unlikely that any large net *expansions* of capacity would have taken place on a wide front.[1] The principal reasons, it will be argued later, were the persistently low levels of anticipations, and the effects of the great increases in tax burdens imposed on property and income in recent years—though this last is perhaps more of a secular than a strictly cyclical factor.

Third, the largest part of the *increase* in income between 1933 and 1936 or 1937 can be accounted for in terms of the effects of the deficit spending alone. The money used for this

[1] See Simon Kuznets, National Bureau of Economic Research, *Bulletin* 74, June 25, 1939, Table I; compare, on business construction, his *Commodity Flow and Capital Formation* (1938), Vol. I, p. 382. Business construction in 1934–1936 was less than a third of the totals in 1927–1929.

spending was obtained from government security sales and hence came either from previously idle hoards or from the creation of new money.[1] In either case, it was a net addition, for the time being, to the supply of money being employed in income-producing ways. We are probably not far wide of the mark if we assume that, in the main, this money was treated by its recipients in much the same way as any other current receipts and therefore circulated with about the national average velocity v' (which remained nearly stable, at around 2.22 per year). This point was examined briefly at the end of Chap. IX. Then the deficit spending in 1934–1936 raised the level of the annual national income to levels higher than would have *otherwise* have prevailed, and higher by v' times the amount of the spending [equation (10.3), above]. That is, the spending raised the annual national income to a level some 23.7 billion dollars (10.7×2.22) higher than would have prevailed had all other things remained the same. Now the actual absolute increase in income above 1933, as remarked above, was 21 billion dollars to the end of 1936 and 25 billion dollars to the end of 1937. If we split the difference, as a rough way of allowing for the lag of income changes behind spending, the increase for the average of 1936–1937 is 23 billion dollars. Hence all of the actual increase in income between 1933 and 1936–1937 can be "explained" solely by the effect of the deficit spending.[2]

[1] Also see Appendix III, below. Member-bank holdings of U. S. securities increased only 4.4 billion dollars in this period (Dec. 31 figures), and Federal Reserve Bank holdings remained nearly constant; holdings of non-member banks increased (on an average of June call-date figures) about a billion. In this period, the larger part of the deficit spending of 10.7 billion dollars was therefore financed by the sale of securities to others than commercial bankers: presumably, that is, by the utilization either of previously idle hoards or of money newly created in other ways. The stock of circulating money increased by some 9.4 billion dollars from the average of 1933–1934 (June call-date figures) to the average of 1936–1937.

[2] If this numerical conclusion seems questionable, it may be pointed out again that between 1933 and 1936 the money stock was *increasing*, while estimated hoards rose by only about 4 billion dollars. Hence at the utmost, only 4 billion dollars out of the total deficit spending of 10.7 billions in this period could have been hoarded

What this last proposition does and does not mean must be made clear. It does not mean, of course, that there was no increase in private investment activity between 1933 and 1936. What it *does* mean is that nearly all of the increase in private investment which did take place was the result of the receipt, spending and respending of the sums originally received from the government, and that almost none of it was due to *independent* increases in private spending traceable to a rise in the general level of anticipations. That is, the "normal" self-generating cyclical process of recovery played almost no part in the events of 1934–1936. Nor did the increase in income induced by the government spending generate any other type of substantial rise in general anticipations. That is, it failed to induce any substantial increase in private activity, *except* to the extent necessary to supply the visible or immediately prospective increases in demand created by the spending and respending of the government money. Business men and consumers alike, taken as a whole, must have increased their outlays only in proportion to the

---

on balance, in absolute terms. But if the proportion of the new money spent by the government which was hoarded had been merely the same as the proportion of the total stock of circulating money which was then being held in hoards (31 to 35 per cent; see the estimates for the term h in Appendix II, below), then the additions to hoards would have totaled about 3.5 billion dollars (10.7×0.33). This last figure is close enough to the estimate of the total increase in hoards which was just given to suggest that most of the increase in hoards actually did represent the hoarding of income derived directly or indirectly from the deficit spending, and that the sums spent by the government actually circulated with nearly the same *average* velocity as any other money spent by private firms or individuals. That is, the numerical value of the marginal desire to hoard was not much if any higher, with respect to increases in income derived from government operations, than that of the average desire to hold money in general.

On the other hand, however, nearly 4 billion dollars of gold was imported net in 1934–1936; and much of this, being fugitive European capital, gave rise to bank deposits which were probably also hoarded. The sources of *possible* increases in hoards hence add up to more than the estimated *actual* increases, which means that some dishoarding was taking place on other accounts. That is, so far as deposits arising from gold imports were hoarded in an amount greater than roughly half a billion dollars, the hoarding of government-created income was *less* than the amounts just suggested. Compare the study by Victor Longstreet in the *Proceedings* of the American Economic Association, March, 1940.

actual or the immediately prospective increase in their receipts, not more, for the *relative* size of hoards *h* remained nearly constant; and business investment in most fields did not go much beyond the repairs, replacements and restocking necessary to meet current demands.[1] This episode is therefore an almost perfect illustration of the theoretical case described in Sec. 2, above, in which anticipations remained but little changed. Recovery was achieved, but the pump refused to prime.

On the other hand, deficit spending *was* primarily responsible for an actual recovery which, had other things remained the same, would not have appeared. It can again be argued, of course, that both the deficit spending itself and presumably other aspects of the New Deal program had a depressing effect on business psychology, and that in the absence of deficit spending, private anticipations would presently have risen in the familiar cyclical way. On this contention, the data we are now examining cast no light. Whatever the ultimate explanation, however—whether it was increased taxation or deficit spending or something else—the 1934–1936 increase in income failed almost completely to evoke that rise in general anticipations and that subsequent increase in private investment *in advance* of realized market demands, which characterize the "normal" pattern of business-cycle development.

6

The next period, that of the recession of 1937–1938, is a more complex phenomenon. The recession really began, when seen in retrospect, just about the middle of 1937, ran to the middle of 1938 and was followed by a relatively rapid partial recovery. Although the recession was rather brief, it was unusually severe. At least three elements played important parts in it. One was the fact that in late 1936 a number of bottlenecks had apparently begun to develop in the production mechanism. Certain prices had begun to go up; and in

[1] For rough statistical estimates confirming these views, see Appendix III, below.

various fields, output was close to current capacity. President Roosevelt also undoubtedly dampened anticipations somewhat by his comments on the undesirability of the price increases current at that time. Second, the reserve requirements of member banks were doubled by action in three stages, in August, 1936, and in March and May, 1937, to check what was thought to be incipient inflation. This forced a drop of nearly 2 billion dollars in member-bank investment portfolios. Finally, at the beginning of 1937, the volume of Federal deficit spending was sharply cut, and the net total for all government bodies fell from a rate of 366 million dollars a month in December, 1936, to only 37 millions in March, 1937. The volume of deficit spending remained low through 1937, and the total for the year was only 806 million dollars, some 3,250 millions less than in 1936.[1] At the value of v' current then, roughly 2.20 per year, this decline in deficit spending meant that income must have dropped to levels more than 7 billion dollars a year lower than *would* have prevailed had the 1936 rate of spending been maintained, and had all other conditions remained unchanged.

Despite this depressing influence, however, the absolute figures for national income on a monthly basis held up all through 1937, so that the total income for 1937 was higher than that for 1936. It was not until the first 2 months of 1938 that income definitely dropped to lower levels. This lag of the drop in income behind that in deficit spending (by a full year) is so large that the second change cannot be regarded as the principal *immediate* cause of the first.

Rather, the most defensible interpretation probably is, first, that the 1937–1938 recession was a fairly "normal" self-generating cyclical affair in its origin, and one which would have come about even in the absence of government

[1] But the 1936 figures are swollen by the effects of the redemption of the Veterans' Adjusted Service Certificates, which produced a sharp rise in the deficit-spending figures in the middle of the year. It is estimated that rather more than half a billion dollars of the proceeds were soon spent in ways that increased subsequent income.

intervention; but that, second, it was intensified by the government's own actions.

With respect to the first point, the appearance of bottlenecks and price rises in the latter part of 1936, while deficit spending was still in full swing, is evidence that the beginning of an "automatic" self-generated end of the expansion phase was already in sight. Such symptoms must certainly have led the more cautious business men and other investors to revise their current anticipations downward, and thus have made a fairly early termination of the current expansion phase inevitable. This view is also supported by the fact that the stock market turned down in March, 1937, several months *ahead* of the basic indices of production and trade. The latter indices themselves remained high well into the summer of 1937 and then began a decline which gained momentum only gradually. The substantial lag between marked changes in business men's decisions (which these indices reflect, though also with some lag) and marked consequent changes in the *total* volume of income payments,[1] together with the effects of the seasonal increases in spending in the last months of the year, presumably account for the fact that national income itself did not begin to fall in absolute terms until early in 1938.

With respect to the second point, it seems clear that the several planned and unplanned steps which the government took in this period materially intensified, even though they did not initiate, the general downturn of 1937–1938. For one thing, the mere decline of deficit spending to its previous volume, after the peak produced in June, 1936, by the redemption of Veterans' Certificates (a peak wholly unrelated to any "planned" changes in the volume of deficit spending, so far as this spending was intended to induce business revival), would probably have produced a perceptible though brief recession in business activity anyway. In

[1] Thus a decrease in factory pay rolls entails a *pro tanto* decline in income; but at first the expenditures of those newly unemployed, and hence the incomes *derived from* such expenditures, usually do not fall in equivalent degree.

consequence of the decline, the government paid out nearly 400 million dollars less in the 3 months from September through November, 1936, than in the 3 months from June through August. This was a fairly severe decrease in the current rate of spending for so short a period, and can hardly have encouraged either current business activity or the short-run anticipations based on such activity. For another thing, as already remarked, member-bank reserve requirements were doubled beginning in August, 1936. Finally, at the start of 1937, the volume of deficit spending itself was again cut heavily, this time deliberately, and was cut almost to zero. In retrospect, it is hard to avoid the conclusion that these last two restrictive steps were at best unnecessary. The end of the expansion was already in sight when they were initiated, and the cessation of Certificate redemption was already making some recession likely. More probably, they were taken at just the wrong time, and merely served to intensify a recession which in retrospect had apparently already become inevitable—a recession the seeds of which had already been planted, though they had not yet become active. They thus made it needlessly severe.

The last principal period is that from early 1938 to the middle of 1940, and really falls in two divisions. After the 1937–1938 slump, deficit spending was rapidly revived, and before the end of 1938 was nearly back to the average levels of 1934–1936. It has kept at substantially those levels ever since. Industrial production, car loadings, factory employment and income likewise picked up after the middle of 1938, and indeed recovered so nearly synchronously with the increase in deficit spending that it is again difficult to regard one change as the direct cause of the other. Moreover, stock prices, which had lagged behind at the beginning of the contraction, here led the procession. The start of this new recovery phase hence also appears to have been, in the main, a relatively "normal" and self-generating cyclical phenomenon.

Finally, the period since early 1939 has been so overshadowed by the imminence and then the ultimate outbreak

of the new European war, and by the initiation of our own vast rearmament program, that the effects both of deficit spending and of changes in the peacetime varieties of general anticipations have been rather pushed into the background. The phenomena thus far witnessed hence cast little light on the problems particularly at issue in this chapter, and will not be examined further.

The general conclusions suggested by this review of recent American experience with deficit spending can be indicated in brief compass. First, in 1931, 1932 and early 1933, anticipations were still falling sharply though irregularly. Much of the deficit spending of this period, therefore, was probably dissipated rapidly into increases in effective hoarding, without doing more than abate somewhat the absolute decline in income. The recovery and recession from March to December, 1933, presumably had little relation to deficit spending. Second, in 1934–1936 anticipations were fairly constant, but at a low level; and although deficit spending produced parallel increases in business activity and income, it failed to bring about any substantial revival of private activity other than that which was more or less directly caused by the spending itself. That is, no self-generating cyclical expansion was started, and no "pump-priming" effect developed. Third, the recession of 1937–1938 would probably have come anyway, but it was almost certainly intensified by the government's own actions. Finally, the revival of late 1938 was largely independent in its origins of deficit spending.

On the whole, then, this American experience cannot give much encouragement to the advocates of "pump priming" —that is, of deficit spending viewed as a device for stimulating the recovery of that business activity which is undertaken on purely private initiative. Nor has deficit spending been managed in this particular case, whatever its theoretical possibilities, so as to avoid or even markedly to abate sharp business recessions. But this is all very far from being a condemnation of deficit spending when viewed as a device for *supplementing* purely private activity, and for raising the national income to endurable levels. If deficit spending was

the only way by which income could have been raised out of the 1931–1933 trough, then deficit spending was a good thing. It will be contended by many, as previously remarked, that deficit spending and other New Deal policies were precisely what discouraged and throttled private enterprise. This contention will be examined from another angle in the next chapter. It is one on which the data before us in the present chapter, however, cast no light.

In Appendix III, below, an estimate is made of the relative contributions of government deficit spending and of changes in the volume of new private investment to semiannual changes in the national money income, in 1929–1939. The estimated changes in private investment there presented are merely constructs, and are derived from the residuals obtained when the income-increasing effects of deficit spending are subtracted from the actual changes in income. They therefore have no independent significance. It is interesting to see, however, that the pattern of changes in private investment as thus deduced corresponds quite closely to the interpretation of events since 1929 which was given in the preceding pages.

7

Both this review of recent American experience and the general analysis presented in earlier chapters thus make inescapable the conclusion that in economies like ours, private enterprise, for a variety of reasons, is necessarily both unwilling and unable to maintain full employment through the whole course of the business cycle. In the vicinity of the cyclical peaks, the employment given by private enterprise in the past has often approached the currently attainable maximum volume, but since 1929 even this has not been achieved, and in all other phases of the cycle private employment has been far below the maximum. Stated the other way around, the *average* volume of unemployment for any one cycle taken as a whole is and always has been substantial relative to the number of people able and willing

to work. This is not something new. It has always been true in greater or less degree even in the eras of most protracted "prosperity," except near the cyclical peaks. The unemployment of the past decade, at least in part, is only an intensified form of an old phenomenon.

If private industry is unable to maintain continuously a volume of employment which is fairly close to the currently attainable maximum, as measured by the proportion of people wanting jobs who can actually get them—if relative unemployment is always high on an average of each business cycle—should anything be done about it, and if so, what?

Broadly speaking, only two courses are open. Private enterprise can endeavor to rectify the situation, or the government—the society as a whole—can act. The whole burden of the analysis given in earlier chapters, however, goes to show that under our present general forms of social and economic organization and with our present patterns of economic behavior, private enterprise is virtually powerless to do anything except intermittently. Its very nature, in democratic countries, is such as to compel it to vary ceaselessly, on eminently rational grounds, the volume of its own activity and hence the volume of employment it can give.[1] Therefore any continuously effective action is up to the government.

But why take any action at all? At least three sets of considerations make government action both defensible, and essential. One is the self-interest of private business firms themselves. When any substantial number of firms reduce the volume of employment they give currently—in response,

[1] It is sometimes still argued that private business *could* "cure" cyclical unemployment if it were only allowed to cut wages freely. All other things equal, however, this would merely reduce consumers' incomes and hence the money volume of business sales by the same amount, and thus leave unemployment unaffected or even reduced. Business profits, also, would be more likely to fall than to rise over time. Moreover, the periods when business men would most like to cut wages, during cyclical contractions and depressions, are also the periods when enterprise in general is most loath to increase the volume of employment it gives on any terms. Decreases in costs alone, as previously argued, are not usually the factor that chiefly induces general cyclical revival.

for example, to merely their own "rational" expectations of cyclical business contraction in the near future—they thereby reduce national income, the current volume of spending, business receipts in general and presently their own receipts and income. This, as we have seen, is the very essence of the business-cycle process. If the government takes action as this situation begins to develop, however, the increased expenditures of those who had been discharged by private firms but are now employed by the government will fill up these cyclical troughs in private business receipts and income, and will raise the total of business receipts through the business cycle as a whole to levels far higher than private enterprise could maintain unaided. A second is the obvious price that the economy as a whole must pay, in terms of the increased incidence of disease and crime and the breakdown of education, whenever any large part of the population is more or less chronically unemployed or underemployed. The third, and most important of all, is the fact (or so I believe it to be) that in a democratic society worthy of the name every person who wishes to work has an inalienable right to employment, with hours of work that leave him time for recreation and his own further education and culture, and at wages that enable him to maintain a decent and reasonably secure standard of living for himself and his dependents. If private enterprise cannot furnish such employment continuously, as it cannot, then it is the paramount duty of the society as a whole, acting through its governmental bodies, to provide such additional employment as is needed. The virtues of self-reliance are great, but the very character of our highly complex and highly specialized society sets rather rigid limits on the extent to which the great bulk of the wage receivers and lower salaried office workers can exercise self-reliance effectively in the economic field.

I shall therefore take it for granted, without further argument, that government action to combat cyclical unemployment is necessary. That is, I shall take it for granted that it is a responsibility of the government to provide decent

employment opportunities for all those who are both able and willing to work, but who have been currently deprived of employment in private enterprise because business men and other private investors have decided to decrease the proportion, of current business receipts and individual income, which they respend on new goods and services. Business men and other investors have an undisputed right to cut down such expenditures if they wish to, in a free country, but the government cannot remain indifferent to the increase in unemployment which then inevitably follows; it must act. This proposition, it must be emphasized, has nothing to do with the distribution of income as such. It is not in itself a proposal to increase the proportion of the national income going to labor, *at the expense* of the receivers of profits and dividends. It is a proposal, rather, to stabilize national income at the highest levels currently attainable, and thus to increase the average *absolute* amounts of income going both to labor and to the receiver of profits and dividends.

What action can the government take which will achieve this end? A variety of instruments are evidently available. They include the various monetary and banking controls, which have long been familiar; alterations in tax rates; the imposition of taxes on individual and business hoards, or at least on increases in such hoards; and the deliberate initiation of changes in the current relation between government receipts and government expenditures. We shall examine these instruments in substantially the reverse order.

By all odds the most powerful and most effective action the government can take to combat cyclical unemployment is deliberate manipulation of the current relation between its income-decreasing receipts and its income-increasing expenditures—that is, briefly, the institution of programs of deficit spending or the reverse. In times of business contraction and depression, the government should create a large excess of such expenditures over receipts, and should maintain this excess until the volume of unemployment in private industry begins to fall. Then, as the economy comes within

sight of the maximum currently attainable volume of employment, deficit spending should be reduced as unemployment declines, to prevent any inflationary price increases, and tax rates should perhaps be raised. The reduction should be carried to zero if possible and even be turned into a net surplus of revenue, *provided this can be done without reducing total employment below the currently attainable maximum.* If it cannot be done, however, the attempt to reach a net surplus of revenue should be abandoned. Subject only to the condition that price inflation must be avoided, the maintenance of full employment should take precedence on every count over observance of the traditional canons of public finance with respect to balancing the government's budget. Finally, if private investment subsequently falls off again (as it eventually will) and if a new period of recession, contraction and unemployment is therefore at hand, the process should once more be reversed, and deficit spending be renewed or increased. Indeed, to be mechanically efficient here, deficit spending should probably begin just *before* the peak, if this peak can be forecast: that is, after private anticipations have stopped rising and have perhaps begun to fall, but before the recession has actually manifested itself in terms of absolutely declining activity and income.

Under this general type of business-cycle policy, serious unemployment will be avoided, yet without any inflationary price increases. In effect, the general public and particularly the investing class will be led, through the purchase of new government securities, to do painlessly and more or less unconsciously that which they will not or cannot do voluntarily and deliberately, namely, to maintain total employment at permanently high levels relative to the number of people who can and will work if they can find jobs. The government simply buys part of the current income of the society with certificates of its own indebtedness, and then spends this income for the common good.

Certain further problems connected with any such systematic program of deficit spending to combat cyclical employ-

ment should be pointed out. First, and perhaps most important, it is probable that over the period of the business cycle, the government deficits incurred in years when privately initiated employment is inadequate will exceed the revenue surpluses accumulated in years of "prosperity." It is therefore also probable that the government debt will grow on balance. Reasons will be given in the next section, however, for not regarding with great misgiving a rise in the public debt which is incurred in this way, to combat unemployment. Second, there are nevertheless various possible dangers to which an increasing public debt can give rise indirectly; they too will be examined in the next section. To minimize them, it would be desirable to have as much of the debt as possible take the form of securities that are not negotiable before maturity, or at least negotiable only after substantial notice. This would prevent a *sudden* and large-scale conversion of such securities into cash, a conversion which would both disrupt the financial structure and, if the proceeds were spent on goods and services, would threaten a serious price inflation. For similar reasons, the deficit spending itself should not be effected through the issue of any substantial amount of additional currency.

Third, most of the government deficit spending of the type here in question will necessarily take place during business contractions or depressions, when the propensity to hoard is rising or already high. If the government is to raise the national money income by a given amount per year under these conditions, it must therefore spend (net) much more than private investors spend when their operations raise income by the same amount. Private investors naturally invest chiefly only when the propensity to hoard is falling or low—in times of actual or impending expansion. The government's task is also made more difficult, and it is compelled to spend correspondingly more money to accomplish a given result, so far as private investors and men in public office are ignorant of the real effects and implications of a well-managed program of unemployment spending, and

react to its initiation with distrust, opposition and a further reduction of private activity.

Fourth, there are serious practical problems over the question of what objective guides the government should follow in changing the current volume of its deficit spending or in passing over to a current revenue surplus. In the first place, as shown previously, it takes time for any substantial change in deficit spending to produce the bulk of its effects on income, probably 3 to 6 months. In the second place, the change in spending can be based only on current evidence with respect to the current movement and level of the business cycle itself. It has also been shown in earlier chapters, however, that the important changes in the business-cycle process usually begin to operate below the surface of events well before they give much reliable and objective evidence, in the form of observable changes in the rate of general activity or the volume of income, of their own existence. The authorities, if they are to adopt a policy of *anticipatory* action, must therefore contend not with one lag but with two. If they want to check an impending recession, for example, they must act so far in advance that the increase in income eventually produced by increased deficit spending will check any decline in the general level of private anticipations *before* the decline has had time to cause much fall in the actual volume of current activity! This is a hard requirement to meet. The difficulties presented by the related problem of checking a boom by action taken in advance, *without* turning the boom into severe contraction, are illustrated by American experience in 1936–1937.

The government's deficit-spending policy, therefore, probably cannot successfully *anticipate* cyclical fluctuations in employment and hence cannot eliminate them entirely. It can only endeavor to offset cyclical unemployment in private industry when and as it occurs, and to avoid increasing the volume of deficit spending to the point where it produces either an inflationary increase in prices at large, or a sudden rise in particular price groups much above some presumably

"normal" current relation to the general average. Of these objective criteria for action, the phenomenon of unemployment is fairly easily observed, and provides a workable guide for government action in the contraction and depression phases of the cycle. The problem of price change is less easy to deal with, since the lag of such changes behind the antecedent changes in underlying conditions in which they originate is important. A fairly good approximation to a satisfactory guide for government action, however, can presumably be devised.[1] The end result will then be not to eliminate the cyclical fluctuations in total employment entirely but to fill in the larger part of the troughs between the cyclical peaks in privately initiated employment.

Finally, and to carry out effectively the policy just outlined, the executive must be entrusted with an adequate unexpended balance of available appropriations, to be utilized at its discretion, and must also keep a stock of plans and specifications always on hand and ready to use. If this is done, then when the volume of spending should be increased to combat unemployment, the funds will flow promptly and efficiently into individual incomes, and can be expended to carry out well-planned projects of adequate size that will seem reasonable and desirable to the general public. Such things as the construction of roads, irrigation and flood controls, hospitals, slum clearance in the cities and large sanitation programs are desirable in themselves, absorb unemployment and stimulate private enterprise directly and indirectly. If each change in policy is made to require Congressional action, on the other hand, the changes will always lag far behind current needs, and their effects may become

[1] The problem of devising and using adequate criteria on which to base government action is a serious one, however, and cannot be dismissed with a wave of the hand. Its character can be appreciated by considering the situation in, say, the middle of 1936 and then asking one's self what action should have been taken at that time, had one not known what was to be the course of subsequent events in 1937–1938. The trouble in 1936–1937 was not that the government's various actions would have been inappropriate if taken in, say, the early or middle part of 1936 but that they were taken too late and in excessive degree.

precisely the opposite of what the intervening developments require.

We shall not attempt to investigate the further difficult problems which are involved here, concerning wage rates, working conditions, the basing of payments on family rather than on individual needs, and the choices between direct relief, WPA and various types of public works.[1] Nor shall we try to explore the problem of Federal as against state and local administration, of Federal grants to states and localities and the like. In large degree, these all rest on questions of administration rather than of general economic principle.

8

As already remarked, it seems probable that if the policies just outlined are carried out, the public debt will grow persistently over time. The factors likely to bring about such a growth will be considered further in the next chapter. If we take the probability for granted at this point, two questions immediately present themselves. First, can this prospective persistent increase in the public debt actually be achieved, especially in view of the high level at which the American debt already stands; and second, if it is achieved, will it have such injurious results or threaten such dangers to the economy as to offset the benefits of any program of deficit spending directed against cyclical unemployment?

The first question can be answered rather easily, and in the affirmative. As long as the Federal government retains its present direct and indirect powers over the currency supply, the Federal Reserve Banks, the money markets and hence even over the commercial banking system, there can be no serious mechanical obstacle to very large further increases in the Federal debt, and (if the increases are not

[1] But because of the higher marginal propensity to hoard of the moderate- and high-income groups as income increases, there is a general presumption, as pointed out previously, against forms of deficit spending that are likely to flow initially in any large degree to the receivers of dividends and interest.

made too abruptly) at low rates of interest.[1] The reasons for this conclusion are as follows.

The development which is the proximate cause of the appearance of unemployment in private industry, and which therefore creates the necessity for government deficit spending to counteract and absorb this unemployment, is a decrease in the proportion of current business receipts and current income which business firms and individuals respend on new goods and services. When such a decrease occurs, other things equal, the total combined volume of current purchases of consumers' and producers' goods and services necessarily falls. The monetary counterpart of the fall is either an increase in the current absolute size of individual and business hoards, or a repayment of bank loans and the like, or a purchase of securities from banks—all operations which increase "effective" hoards, as we have previously defined the latter term. There are no other ways in which the society as a whole can utilize that part of its current money income which it does *not* respend on current output.

With respect to the provision of funds for the flotation of new government security issues, there are then three principal alternatives. First, the individuals and business firms that hold larger hoards of actual money than before—more currency or demand deposits—may be willing to spend all of the increases in their hoards on the purchase of the new government securities. In that event, there is no problem. The government obtains the additions to hoards and, by respending them, absorbs the unemployment which the original increase in hoards itself created. Also, there is no increase in the total

[1] At least, there need be no serious obstacles for the *central* government, which can, in effect, create its own market and its own "credit standing" (if the latter term means anything under these circumstances!) through the banks, and can thus keep the interest rates it pays at low levels. But the same thing may not be true for local governments, which must compete with one another for funds and which cannot so easily transform the money markets and the banking system into acquiescent bond swallowers.

If additional reserves are needed by the commercial banks, some of the securities can be borrowed against at the Reserve Banks.

stock of money. Second, however, the hoarders may refuse to buy securities at all, and may insist on continuing to hold more actual currency or deposits than before. Then the government must sell its new securities to the banks; and the resulting increase in deposits will increase the total money stock. Limitations can conceivably be set to this process, either by the unwillingness of the banks to buy more government securities or by their inability to buy because of their reserve position. With our present gold stocks, excess bank reserves and elastic banking regulations, however, no limit on increases in the money stock which are really effected to meet the desire to hold additional money merely in hoards is likely to come into operation for a long time; and the banks already hold far too large a portfolio of government securities as it is to risk collapse of the government security market through any deliberate refusal to buy new issues. Third, the initial increase in effective private hoarding may take the form of an initial *decrease* in the quantity of bank deposits, as through the repayment of bank loans or the purchase of securities from bank portfolios. In that event, however, and other things again equal, an excess of bank reserves will be created; and if the banks now buy new government securities with the excess, the effect is simply to restore deposits to the level prevailing before the hoarding movement began.

There are thus no serious mechanical obstacles, at least under present conditions, to the expansion of government security issues to absorb cyclical unemployment. In the first and third cases, also, no increase in the money stock will result. The government, in effect, merely spends on current output those sums which individuals and business firms are not currently willing to spend themselves. In the second case, it is true, the money stock will expand. But this expansion is not *in itself* a dangerous development, for the expansion really takes place merely in order to enable certain groups to increase their holdings of idle cash *without* thereby bringing about any substantial and enduring decrease in na-

tional money income or in the total volume of employment. If liquidity preferences for money and hence the average desire to hoard subsequently rise still further, it is true, then it will become increasingly difficult to sell additional government securities to individuals, firms and banks at the same rates of interest as before, and present holders of previous issues may start to sell them. Then both the continuance of government borrowing and even the solvency of the banks and insurance companies, which are the largest holders of government securities, will be temporarily threatened. In this event, the only way to hold up the market will be to bring in the Federal Reserve Banks as the ultimate buyers of both old and new government issues, until the increased liquidity desires of the country are satisfied. The present condition of the Reserve Banks, however, the possibility of using nearly all of the present enormous monetary gold stocks for this purpose, and the possibility of altering existing legislation, if necessary, make it obvious that no technical or legal difficulties can seriously limit the effectiveness of Reserve Bank action in thus supporting the government bond market as long as is required. It is true that the purchase of new government issues by the Reserve Banks increases the stock of money, like similar purchases by other banks; but in the situation here contemplated, the increase all moves into hoards and is innocuous.

There is hence no serious mechanical obstacle, to repeat, to whatever expansion of the government debt may be necessary to absorb cyclical unemployment in private enterprise. May not this expansion, however, produce such injurious effects on the rest of the economy or threaten such dangers as to offset the benefits obtained? This is the second question asked at the beginning of the present section.

There is one real danger which must not be overlooked and with which the authorities concerned must be prepared to deal. This is the danger that after private holdings of new government securities have increased, and especially after the money stock has been expanded substantially, something

will happen to lower the general level of liquidity preferences *abruptly*. If the decline is gradual, no harm will be done; on the contrary, this is what government deficit spending and the consequent expansion of employment and national income are intended to produce. If the decline is abrupt and large, however, it may easily start a dangerous and self-feeding "inflationary" movement.[1] Individuals and firms will begin to sell government securities and buy private securities or new investment goods and services on a large scale, and —what may be much more important—will begin to spend the excess cash balances previously held idle in hoards. The prices of corporate securities will begin to go up while those of governments fall; and if the money volume of spending on new goods and services increases rapidly enough so that it both reduces stocks on hand substantially, and begins to run ahead of the expansions of output that are possible within short periods, commodity prices too will begin to rise. This rise in security and commodity prices is likely to stimulate further dishoarding, and then a self-feeding inflationary spiral begins to operate. Something of this sort started on a small scale in late 1939.

This self-feeding inflationary spiral must be broken at all costs, to give output time to catch up with the increase in spending and to prevent the money volume of this spending from expanding further after employment in private industry is thought to be approaching the currently attainable maximum on any wide front. If the dishoarding and spending movement develops suddenly, as it easily may, it is clearly unlikely that any decrease in current deficit spending or any increase in taxation could be effected rapidly enough to check the inflation before it had done serious damage. In this situation, the central-bank discount rate is also an ineffective tool, while if the commercial banks have large excess reserves, as at present, open-market sales by the Reserve Banks would not materially alter the supply of money in the

[1] This term need not be defined precisely here. A detailed definition will be given in Chap. XIV, Sec. 5, below.

hands of the spending public.[1] The only prompt remedy, therefore, is to raise member-bank reserve requirements drastically. This step will compel the commercial banks to reduce their portfolios of loans and discounts and of securities, and the transmission of this pressure to the security and commodity markets and to general business activity will quickly end the inflationary movement.[2]

In summary, therefore, the increase in the government debt caused by deficit spending undertaken to combat cyclical unemployment contains no serious danger of "inflation" in itself, because by definition it will taper off and cease as the maximum volume of employment currently attainable in private industry is approached. It also contains no serious danger of inflation in consequence of its possible effects on the stock of money, because any inflationary movement can be effectively combatted.

Although these inflationary dangers can be avoided, however, there are other aspects of any long-continued even if gradual increase in the public debt which are certainly disturbing at first sight, and which must be examined further. Even though the purposes for which the debt increases are incurred are themselves legitimate and the results they achieve desirable, protracted large increases seem likely to impair the public credit, and perhaps to threaten national bankruptcy. Moreover, as the debt grows the total interest charge will also grow, for it is doubtful if interest rates on government securities can be or should be forced down to absolute zero. Then either tax burdens will increase to correspond, and will eventually reach levels thought to be unendurably high, or the government will be forced to pay

[1] On the contrary, the Reserve Banks should here *support* the government bond market, other things equal—a step which in itself, however, would merely add fuel to the inflationary flames. On this problem, also see the next footnote.

[2] So far as the commercial banks sell government securities to the Reserve Banks, however, at prices substantially pegged by the latter, the operation is a stalemate. It may therefore be necessary for the Reserve Banks to let government security prices fall for a time, in order to force the commercial banks to liquidate other parts of their portfolios.

part of the interest on its old debt out of the proceeds of new borrowing. All of these possible consequences are repugnant alike to the traditional canons of "sound" public finance and to the dictates of what the average citizen instinctively feels to be common sense.

Do such considerations impose a conclusive prohibition on progressive increases in the public debt which are incurred to counteract unemployment in private enterprise?

No unequivocal reply can be given to this question. The answer depends both on the rate of growth of the debt, on the particular types and rates of taxation imposed, on the general policy of the society with respect to the distribution of wealth and income, and above all on the practices of individuals and business firms with respect to the hoarding of money. At one extreme, the debt may grow less rapidly than the national income. Then the debt itself will impose only a decreasing *relative* burden, and its slow growth will hence not have particularly objectionable consequences. At the other extreme, it may grow so rapidly that the proceeds of the then-existing system of taxation cannot defray more than a part of even the interest charges entailed. Then the society will be headed toward a financial maelstrom that can end only in bankruptcy and repudiation.

I think this second alternative, however, is actually most unlikely to result from debt increases incurred merely to offset unemployment in private enterprise. The corresponding spending is undertaken, in the immediate sense, only because and only so far as individuals and firms fail to respend current income or business recepts on current output—that is, only so far as they hoard—except for the core of "frictional" unemployment that always exists in consequence of interstitial and other maladjustments. The volume of hoarding is always substantial when measured on an average of the business cycle as a whole, of course, but in the absence of such quasi-secular factors of depression as will be discussed in the next chapter, its increases in response to cyclical factors do not appear likely to become

unmanageably large. Moreover, I believe that an appropriately designed tax system can both increase the incentive to spend on current output and can severely discourage hoarding. A number of tax measures directed at these objectives will be proposed in the next section, and also in the next two chapters. So far as successful, such measures will both increase the average volume of private employment directly, thus reducing the volume of deficit spending necessary to absorb unemployment, and by increasing total tax revenues will decrease the deficits necessary to counteract a given volume of unemployment.

On balance, therefore, I think that that growth of the public debt *which is incurred to offset cyclical unemployment in private enterprise* (nothing being implied about debt incurred to finance defense spending!) is likely to be rather gradual, given an appropriate tax system, and is hence not likely to exceed manageable rates and volumes.

If the country finds that it must eventually choose between counteracting unemployment and maintaining reasonably "sound" conditions in the public finances, however, I think—to make my position unequivocal—that the first objective should be selected without hesitation. The rules of dollars-and-cents accounting and of profit-and-loss computations which are appropriate for private individuals and business enterprises, and probably for local governments, do not and cannot apply rigorously to the central government, which is merely the agent of the country as a whole. The national welfare is not synonymous with strict observance of the principles of private bookkeeping, and should not be sacrificed to them. It may eventually be found, to repeat, that fiscal "soundness" cannot be maintained without incurring continued unemployment. Then the country should consider and adopt some method, other than our present one, for organizing and endeavoring to maximize the production and distribution of that flow of incomes to individuals which is, after all, at once the reason for existence and the paramount objective of all economic

societies operating under democratic principles. Examination of the character of these possible alternative methods of economic organization, however, is beyond the province of the present book.

One other aspect of the growth of the public debt should be pointed out. When the growth results from deficit spending to counteract unemployment in private enterprise, it really does nothing more than take the place of that further increase in *private* debts and equities—in the volume of outstanding private stock and bond issues, other loans, ownership participations and the like—which *would* appear if private individuals and enterprises did not insist from time to time on hoarding part of their current business or income receipts.[1] It is thus not in itself objectionable, nor a sign of danger. Moreover, under a systematic government-spending program the funds raised through deficit financing will be spent on projects which have enduring utility to the society as a whole, and which are genuine additions to social wealth, but which private enterprise will not undertake either because of their size, their risk from the private-profit point of view, or the fact that no price or fee can properly be charged for their end products—thus preventing them from yielding a dollars-and-cents "profit." In many cases, as with power installations, housing projects and the like, earnings or fees will permit the public investment both to pay its own interest costs and eventually to liquidate the debt itself. In other cases, the value of the assets and of the resulting streams of social income often cannot be measured easily or directly in the dollars-and-cents terms of private business accounting. This is the case with most projects for highway construction, disease control, hospitals and the like. Here too, however, the facts that the society has really acquired equivalent assets for its investment of money, and that it receives a

[1] In itself, therefore, the growth of the public debt likewise gives rise to no special problems relating to the distribution of wealth and income which are not also presented by equivalent increases in private debt.

genuine though intangible income from them, are usually unquestionable.

9

The deficit spending just discussed seems likely to be the most effective single measure available to the government for counteracting cyclical unemployment in private enterprise. In addition, as previously remarked, the government can and should utilize its tax system for this purpose. In the tax field, it can take measures of two types. One endeavors to reduce cyclical unemployment directly by penalizing cyclical hoarding. The other endeavors to raise the average general level of anticipations through the course of the business cycle as a whole, and thus to raise the average levels around which private employment itself fluctuates.

The general rationale of the second type of tax measure is obvious enough. Such measures cannot be discussed realistically except in connection with the tax system actually now in force, however, and in connection with determining factors which are of longer time-duration than the business cycle alone. For reasons of convenience, we shall therefore postpone this discussion to a later point. In Chap. XIII, Sec. 6, we shall make a brief overall appraisal of the relevant parts of the American tax system as it has operated in recent years; and in Chap. XIV, Sec. 4, we shall offer a number of specific recommendations for changes in the tax laws now in operation, with reference both to more enduring factors and especially to the immediate situation in this country.

The other proposal, the explicit taxation of hoards as a method of combating cyclical or other unemployment, has never been tried in practice, so far as I know (unless recently in Germany), but may prove to have considerable effectiveness. Such a tax should be imposed not on the absolute size of hoards themselves but on increases in their *relative* size, and should hit hoards held both by individuals and by business firms—"hoards" being defined as in earlier

chapters. The tax should be levied at rather heavy rates, and the proceeds should be used to absorb unemployment. The tax would thus strike at unemployment both directly and also by encouraging the spending of current business and individual-income receipts on current output. The argument in support of this proposal is as follows.

On the view set out in earlier chapters, self-generating business cycles constitute the response of the economy to the mutually stimulating interaction of changes in money income and changes in the general level of anticipations. If anticipations fall, other things equal, individuals and business firms decrease their current outlays of current income on goods and services. Other things equal, however, the "secondary" fall in individual incomes which is produced by a given fall in individual outlays will not appear until a somewhat later date, and so also, *mutatis mutandis*, for business receipts and outlays. When business firms and individuals begin to hoard, they therefore soon find themselves in possession of larger cash holdings than before, *relative* to the size of their current money receipts or incomes. In other words, the relative size of money hoards rises (substantially the ratio h), and in specific cases their absolute size may also rise. In the immediate mechanical sense, it is the non-spending of these hoards within the usual income- or business-receipts-expenditure periods which "causes" the subsequent decline in total spending and in activity, and hence "causes" the onset of recession. If any increase in the ratio of hoards to business receipts or to income were heavily taxed, however, a strong inducement would be created for spending the excess of hoards, and thus the developing recession would be checked and reversed. Provision would have to be made to prevent any large by-passing of money into security exchanges and the like, and thus to ensure the respending of most of the increases in hoards on the current output of goods and services, but this problem presents no insuperable difficulties of principle.[1]

[1] Purchases by business enterprises of any previously issued securities and other claims or titles should be regarded as additions to "hoards," except in the case of

A tax of this sort does not decrease current business or individual income—is not "income-decreasing"—but on the contrary, when the government spends the proceeds, is income-*increasing*. It offers a way of counteracting cyclical unemployment without government deficit spending and hence without increasing the public debt, and therefore seems most attractive. If people will not maintain prosperity voluntarily, by spending all of their current money incomes on current output, then let us coerce them into doing so by taxing their unspent hoards!

The difficulties with this proposal, when regarded as a device for combatting cyclical unemployment, are primarily ones of practical administration alone, but they are serious. The changes in the relative size of hoards which are especially important for these purposes are those that take place within periods of a few weeks or months at most. Quarterly or even monthly reports on both income and cash holdings would hence be necessary. This would be a great nuisance to taxpayers and expensive to administer. Moreover, for most business firms and for many individuals, the only fair basis on which to reckon incomes and changes in cash holdings is the 12-month period, because of wide seasonal fluctuations. This would almost completely prevent the proposed tax from acting as a *rapid* counter-agent to increased relative hoarding and hence from combatting *all* cyclical unemployment, though the tax would be reasonably effective over time.[1] In addition, problems arise over the proper treatment

financial institutions, and also purchases of new securities issued to replace old ones; but purchases of "new-capital" issues should not be, since they presumably reflect the purchase of new goods and services by the issuing firm. The technical problems often involved in distinguishing the latter issues will not be examined here.

C. W. Hazelett, in his *Incentive Taxation* (1936; 3d ed., 1939) has proposed an analogous tax on hoards to prevent business depressions; and also business income taxes at rates varying inversely with the degree of capacity at which the given firm is operating. I am indebted to Prof. Carl S. Shoup for reference to this interesting book, which came to my attention after the present study was in press.

[1] If a 100 per cent tax on increases in hoards could somehow be imposed the instant the increase came into existence, and if the proceeds of the tax could be spent to employ the men just thrown out of work by the increase in hoarding, there would be no unemployment at all, unless of the "frictional" type.

of genuine increases in individual and business incomes, which would presumably give rise to defensible increases in the relative size of average cash holdings, and also over the treatment of bank borrowing,[1] capital flotations and inter-firm transactions and security purchases. These last two sets of operations would permit an easy evasion of the tax, unless properly handled. Finally, although information on bank deposits can be obtained easily enough, information on the location and size of currency holdings is almost completely lacking at present. Very substantial evasions of the tax through this channel would hence be possible, and could probably not be checked more than partially by penalty taxes or the use of information on disbursements of currency by the banks.

On balance, attractive though it is on paper, this tax on hoards therefore seems unlikely to be effective in combatting more than a part of the cyclical fluctuations in private employment. The remainder, and probably the larger part, will still have to be met by government deficit spending.[2]

A substantially different tax proposal has also been advanced from time to time. This is the proposal to vary tax rates, and especially the rates in the higher brackets of the income tax, with the phases of the business cycle. Because of the considerable interval which usually elapses between the receipt of income and the payment of the corresponding tax, however, this device would be comparatively insensitive. Much more important is the objection that it would discourage private anticipations, by increasing current and prospective tax burdens, at just the time when it is most desirable to keep anticipations high and thus to maintain the current prosperity. The device would therefore merely help

[1] Since effective hoarding may take the form either of holding actual cash or of repaying bank loans, buying securities from banks or otherwise extinguishing bank deposits, any excess of bank reserves greater than, say, 10 per cent above the legal requirements should also be taxed as an increase in "hoards."

[2] The tax on hoards here proposed is not the same as the tax on increases in the *absolute* size of hoards, and primarily those of business firms, which will be proposed in Chap. XIV, below.

to perpetuate a relatively stable volume of unemployment, rather than to abolish it entirely.

In addition to the measures for combatting cyclical unemployment which have already been discussed, the familiar central controls over the banking system and the money markets should obviously be retained, but their use should probably be confined chiefly to the maintenance of order, stability and solvency within the banking system proper and to the alleviation of seasonal or other short-run pressures. It seems doubtful that controls of this type can be made to provide workable tools for materially influencing the movements of general economic activity much *in advance* of the development of undesirable conditions. If the control measures are mild or only moderate in severity, as in 1928–1929, they may fail to be effective soon enough. If they are drastic, the necessity for taking such extreme steps is not likely to be recognized until the conditions at which they are aimed have already begun to reach their own limit. In that event, their use may merely intensify a correction which is beginning to get started anyway, as in 1936–1937. The chief exception to this last appears in the case, already referred to, in which an expansion of general economic activity is accompanied by a rise in prices so rapid as to make it clear that a self-feeding inflation is in process. Such a conflagration must be stopped at any price, and by the use of all the controls available. With this exception, the prevention of sudden large changes in the total volume of media of exchange and in market interest rates is probably the broadest general objective at which these controls should be aimed.[1]

[1] The problems faced by the various monetary authorities in this country are, of course, far more complicated in detail than this brief paragraph can suggest, but they will not be explored further here. For a helpful discussion of some of the questions involved here, see two articles by John K. Langum in the *Financial and Investment Review*, published by the School of Business Administration, University of Minnesota, for August and December, 1939.

The not infrequent proposal to nationalize the whole banking system is largely irrelevant to the problem of dealing with cyclical unemployment. Such action would facilitate government security sales and assure a firm market, but it would do nothing to alter hoarding habits and desires. These last are the proximate crux

Finally, and in line with this last suggestion, the policy of deliberately stabilizing the aggregate supply of circulating money itself, which I have advocated elsewhere,[1] would also contribute toward reducing the amplitude of cyclical fluctuations. In the upswing, it would diminish the expansibility of at least a part of the supply of new investment funds, and would thus decrease the likelihood that new investment will first expand too rapidly and then have to be revised sharply downward, thus provoking a general contraction. In periods of recession and depression, this policy would also cause an earlier accumulation of actually idle cash hoards in the hands of non-bankers. The latter accumulation would entail a displacement of this component of the investment supply curves of Diagram II to the right, and hence a quicker recovery when once anticipations start to rise.

---

of the problem of unemployment, though they too, of course, must in turn be explained.

[1] See especially my paper in the volume of essays for Prof. Irving Fisher, *Lessons of Monetary Experience*, cited above.

Chapter XIII

SECULAR STAGNATION AND GOVERNMENT POLICY

I

THE primary concern of this book has been with self-generating business cycles—with their internal dynamics, with the factors controlling certain of the quantitative relations they involve and with the government policies required to counteract the accompanying cyclical unemployment in private industry. We have hitherto made little attempt, however, to say anything definitive about the average level of economic activity around which any one self-generating business cycle fluctuates, the trend of activity from one cycle to the next or even the amplitudes of the cycles themselves. In largest part, we have treated business cycles as self-contained entities, without paying much attention to the matrix of other conditions, relations and historical changes in which they actually operate. This matrix we have kept in the background by taking for granted, in our analysis to this point, that the "exogenous" factors other than government intervention and the like were either constant or inconsequential.

We cannot leave the matter there, however, without giving a wholly unrealistic picture of the actual world. In earlier chapters, we have shown that most consumption is dependent on income and that *changes* in income are chiefly governed, in the absence of governmental intervention, by changes in the volume of private investment. We have also shown that in the short run and with a given general level of investment opportunities, private investment is largely dependent on anticipations and hence on income in earlier periods. But as the period held in view becomes longer, the

supply of investment opportunities itself changes as techniques, populations, tastes, exploited land areas and the like gradually alter, and these changes in the supply of what are currently regarded as opportunities for private investment come to play an increasing part in determining the average volume of private investment. Over periods of several cycles at a time, the factors which ultimately determine the volume of private investment and hence total output and income, if there is no governmental intervention, are therefore the marginal propensity to consume, the supply of investment opportunities and the average level of anticipations.

In recent years, a number of students have come to feel that the combined effect of the working of these three factors is likely to be much less favorable in the future than it has been in the past. The principal proposition advanced by this school of thought, which was started in England by J. M. Keynes and which has been led in the United States by Professor Hansen,[1] is that the average level of privately initiated economic activity is not only far below the physically attainable maximum now, which all would admit, but is virtually certain to remain far below in the calculable future. This is what is commonly called the "stagnation theory." According to this theory, future business-cycle fluctuations will take place around a low average level of private activity, will be rather small in amplitude, and hence will not form an important feature of the general economic landscape. The phases of cyclical revival will be weak and brief; the phases of cyclical contraction and depression long and severe; and the dominant fact will be the secular stagnation of privately initiated activity as a whole. The forecast for the future of this private activity is hence a dismal one.

[1] See especially A. H. Hansen, *Full Recovery or Stagnation?* (1938); Seven Harvard and Tufts Economists, *An Economic Program for American Democracy* (1938); and the *Hearings* of the Temporary National Economic Committee (pursuant to P. R. 113, 75 Cong.; 1939 *ff.*), particularly Parts 1, 2 and 9, and in the last Part the testimony of Professor Hansen, Dr. Currie and Dr. Altman and the questions put by Nehemkis. For an attempt to refute these views, see the study by H. G. Moulton *et al.*, *Capital Expansion, Employment and Economic Stability* (1940).

The stagnation theory is also used to explain the failure of economic activity as a whole to recover, after the trough of 1932–1933, to anything like the average levels of the late 1920's. Finally, the inevitable conclusion is reached that in order to keep employment and national income up to anything like the physically attainable and socially desirable levels, virtually continuous government action will be required and, in particular, protracted government deficit spending.

These propositions and conclusions deserve serious attention. They rest on a substantial body of material evidence and are not put forward merely as unsupported speculations. We shall first examine the current form of the stagnation theory in more detail, then restate what seem to be the important elements that govern the development of national economic activity over time, and finally endeavor to formulate certain further conclusions, both with respect to the recent history of this country and with respect to appropriate policies in the future.

2

The current form of the stagnation theory rests on the specific conclusion, for which a good deal of statistical and other evidence is put forward, that the supply of private investment opportunities in the United States cannot be expected to expand indefinitely in the future as it has in the past but rather is likely to contract persistently, at least on a per capita basis, and that a melancholy era of secular stagnation will therefore result. This conclusion is based on a number of principal grounds. First, the *rate* of population increase is known to be slackening off; and if present apparent trends continue, the increase may even give way to an absolute decline. This prospect is taken to make inevitable a secular decline in the demand for new housing relative to the average levels of the last decade or two; and housing construction, of course, has been one of the chief fields for new private investment in the past. Second, no major new techni-

cal inventions or advances requiring vast amounts of new capital for their exploitation, such as the railroads or the automobile, are now in sight or even in prospect. Since it is also held that the existing important techniques are already fairly thoroughly exploited, the conclusion necessarily follows that technical advances are unlikely to provide any large new outlets for private investment in the near future.

Third, the era when new lands were opening up has long since passed in the United States, and indeed has given way to a period in which populations are being forced to abandon previously cultivated areas on a large scale. The prospects for increased export markets in other parts of the world, especially since the German military successes, also seem poor for the near-by future, for a variety of obvious reasons. Fourth, there is little likelihood that those who are able to withhold part of their current incomes from consumption will increase the fraction they consume; it is more probable that they will do the opposite. There is hence small hope for a large expansion of the domestic consumption-goods industries which is based merely on a change in income-consumption habits. Finally, because of these and other conditions and prospects, the marginal propensity to spend on goods and services[1] is and will remain steadily less than 1. In other words, whenever income is somehow increased above the previous quasi-equilibrium level, only a part of the *additional* income will be spent again on goods and services. The prices realized from the sale of the additional output will therefore fail to cover costs, and output and hence income will drop back to the previous quasi-equilibrium levels, which are asserted to be persistently low. Conversely, however, if income falls below the quasi-equilibrium level, spending will

[1] The common statement turns on the propensity to *consume* alone. But this is inadequate, since the propensity to invest is equally significant. The important thing is not that only a part of the increase in income is spent on consumption, but is that part of the increase is not spent at all in ways that will contribute to subsequent income. That is, part is added to effective hoarding. On this, see Chaps. X, Sec. 2, and XI, Secs. 2 and 3, above.

fall by less than income, and presently output and income will therefore rise again.

3

The case in favor of the view that we are faced with a secular decline in investment opportunities and hence a persistently low level of general activity and income, which rests on these and other related grounds, is therefore substantial. At first glance, indeed, it may appear entirely convincing. Before a final conclusion is reached, however, other aspects of the factors just listed should be examined, and additional factors should be brought into the picture.

First, with respect to the marginal propensity to spend, the inference that output and income must be persistently low *merely* because this propensity is persistently less than 1 is not warranted. For example, if the general level of anticipations is constant, the marginal propensity to spend additions to income will *always* be less than 1, no matter whether the constant level of anticipations corresponds to a high *or* to a low volume of income itself. This proposition was developed in an earlier chapter (Chap. X, Sec. 2; also compare Chap. XI, Sec. 3). To say that the marginal propensity to spend is less than 1, therefore, is simply a roundabout way of saying that at any one *constant* level of anticipations, equilibrating forces are at work, which tend to bring actual income into conformity with the volume anticipated. The fact that the marginal propensity to spend is less than 1 is consistent either with a state of protracted depression or with a state of protracted prosperity, or with anything in between. Its failure to equal 1 cannot be made the "explanation" of secular stagnation or decline.

Second, a number of considerations can be adduced which, although not conclusive, at least put in question the belief that the supply of apparent investment opportunities in this country is undergoing or must soon undergo a secular decline. For one thing, the retardation in the rate of population growth which has been cited is genuine enough, but it began

soon after the middle of the last century, not in 1929. Nor does it necessarily forecast a secular decline in the demand for housing. This demand depends partly on the mere number of people requiring shelter, but it also depends on their tastes and incomes. If per capita real incomes were to increase over time and if the *relative* outlay on housing merely stayed unchanged, the absolute demand for housing would show a secular rise even with a constant population. The present decline in the rate of population growth is hence an adverse factor but is not alone sufficient to cause a secular decline in housing demand.[1]

Third, certain other factors may also be expected to increase the demand for new housing, even apart from population increases. One is the effect of the vast networks of first-class motor highways which now surround almost every large city, and which have been one of the tangible fruits of governmental deficit spending in the depression. As their use by both private cars and public buses increases, they will almost inevitably work to relocate residential districts on a large scale and thus to create large new housing demands in the areas of immigration. Another is the steady advance in what is regarded in each period as the minimum standards for housing, an advance which is not confined to tenements alone and which leads eventually to the outright replacement of old units by new. Another and related factor is the great improvements made in recent years on the technical side of housing construction, both in terms of materials and of pre-

[1] I shall not attempt to examine the relevant statistics here. It has been argued that the decline of population growth in recent years is, in the main, a product of the effect of the depression and the attendant uncertainty on marriage and birth rates, and that it would largely disappear in an era of greater confidence and prosperity. In the present connection, however, this argument perhaps begs the question. It has also been contended that although the average size of what is for housing purposes the "family" unit is falling, the *number* of such units is increasing and is increasing substantially more rapidly than population. If this is true, the retardation of population growth need not affect the housing demand adversely. At a given general standard of living, it takes a larger capital outlay, as a rule, to house two family units separately than to house the same total number of persons as a single unit.

fabrication techniques. These improvements make it possible to build ever better houses at the same or lower prices, and again must eventually lead to the outright replacement of old units by new on a large scale. Finally, it is notorious that in many parts of the country, building costs are at levels utterly out of line with costs in other industries. The blame belongs partly on the labor unions, which have enforced high wage rates, short hours and needlessly expensive techniques and working practices; partly on the suppliers, who have demanded and obtained unduly high prices for materials; and partly on the architects and contractors, who at best have been unsuccessful in combatting these high costs. The situation, whether it is called "honest" monopoly or dishonest racketeering, is the more distressing because the monopoly is defeating its own ends. This seems to be one case where smashing the monopoly price would almost certainly produce an increase in the aggregate net incomes of nearly all the individuals and firms involved. But it is also a situation which, in the nature of the case, can hardly continue indefinitely. When means are at last found to break the monopoly charges and practices (*vide* the present Department of Justice investigations) and thus to cut building costs heavily, there seems to be little on the cost side to prevent the development of a building expansion of major proportions.

Fourth, with respect to the alleged serious lack of technical and other advances waiting to be exploited—the alleged lack of investment opportunities in the purely technical sense of that term—the evidence is not altogether conclusive. It is true that the advances known to be awaiting exploitation consist of a great many relatively small improvements on a wide front, rather than any one thing *now* promising to be as spectacular in its ultimate effects as the railroad, the steam turbine, the hydroelectric power station or the automobile. It is also true that many of these improvements are definitely labor saving and even capital saving, so that at *present* levels of output their adoption, after the initial-impact increases in

income produced by building and installing the new equipment itself have passed, would probably work to depress total money income for a substantial period rather than to raise it.[1] But each of the other groups of great inventions just referred to likewise started slowly, attracted little favorable attention at the outset and took many years to work up to the full volume of its income effects. Moreover, and especially in the nineteenth century, many of the most important of what later proved to be the great technical advances were attacked when they were first put forward, precisely because they threatened to produce technological unemployment of labor and even of capital when once they should be installed.

Such historical analogies, of course, can easily be pushed too far. Also, it can be argued that in the absence of virgin world markets, the improvements in British industrial techniques of a century and more ago, for example, would have produced secular stagnation instead of a secular rise in income. Indeed, the first effects of each new advance often *were* industrial and commercial distress for a time in the industries concerned, not "prosperity." But in an era of current general gloom, people are unlikely to appraise the future accurately;[2] and the fact that we cannot *now* put our fingers on major income-raising technical advances awaiting exploitation is not proof that such opportunities have disappeared from the world. Moreover, in many industries, there are now large backlogs of postponed replacements (notably in the railroad field), which under favorable circumstances could be utilized to take advantage of the technical advances developed in recent years but not yet fully exploited.

[1] See the series of studies, directed by David Weintraub, by the Works Progress Administration, National Research Project on *Reemployment Opportunities and Recent Changes in Industrial Techniques* (1937 *ff.*); and the *Hearings* of the Temporary National Economic Committee, cited above, especially Part 2 (1939).

[2] Compare the priceless quotations in the *Reader's Digest*, December, 1939. The very recent and phenomenal advances in research into the problem of atomic power may presage so profound a transformation in our whole technical procedures as to make the present discussions seem wholly beside the point.

Finally, certain other changes to which the stagnation theorists refer are unequivocal. They are not all, however, new. The American frontier, in the sense of any large area thought to be rich in natural resources and easily accessible for exploitation and settlement, has undoubtedly disappeared. But this happened, or has been happening, over a period of decades. It did not occur suddenly in 1929 or 1932. The physical productivity of capital has also been stagnant or declining for decades. We used to boast about it, and call attention to the increasing amounts of capital American plants were using per unit of output. The stimulus our economic life allegedly received in the past from the successive waves of immigration from Europe has also been largely choked off by our own legislation; this is a relatively recent development. Finally, the viciously increasing tariff, quota, foreign exchange and other restrictions which we and other countries have imposed on the international movement of goods and capital in the last decade have undoubtedly had a substantial effect on our own economic activity. While by no means the sole cause, they have contributed heavily to a decline in our merchandise exports, to average levels now some 2 billion dollars a year below the 1929 figure. These international developments *do* constitute a new factor working adversely on our own domestic business activity, and one which the present European war and its probable outcome will do nothing to alleviate. Whatever we gain from temporary increases in our exports of munitions and other supplies is likely to be far more than offset by the prospective sustained losses in other types of exports.

If we take the current form of the stagnation argument as a whole, however, this examination of the principal contentions which have been put forward to support it does not make the argument itself seem convincing. Neither the several conditions cited nor the sum of them appear unequivocally sufficient to produce a severe *secular* stagnation in private economic activity. The evidence advanced with respect to the vanished frontier, population changes, housing

demands, the productivity of capital and improvements in production techniques relates either to conditions which are of long standing, and which existed during earlier eras of rapid expansion as well as in the present era of relative stagnation in privately initiated activity, or to conditions which are in greater or less degree offset by other allied factors. In either case, the evidence is inconclusive. With respect to the conditions which have been of long standing, it would take a good deal of daring to argue that the rates of change that they involve were such that their cumulative effect necessarily inaugurated an era of secular decline precisely in 1929 or in 1932. Only the decline in international commodity and capital movements is both recent and has had an unequivocally bad effect. This decline, though substantial, was hardly important enough relative to our total activity to precipitate an era of genuine secular stagnation in our economic activity as a whole.

If the American economy nevertheless *is* entering on an era of secular stagnation in privately initiated activity, as will actually be argued below, this conclusion must therefore be based on grounds somewhat different from those which have been chiefly emphasized by the stagnation theorists to date. To this question we now turn.

4

Since the first part of the nineteenth century, every important industrial country has gone through long periods of almost continuous business depression, low general activity and serious unemployment, which have lasted through two or more sets of fluctuations of the business-cycle type. During such periods, the business-cycle fluctuations actually witnessed have moved around low average levels of activity, with short and feeble expansion phases and long contraction phases. Such periods may be called, if we please, eras of secular stagnation. Every important industrial country, however, has also passed through long periods of over-all expansion, in which the average level of general activity rose

fairly steadily through two or more business-cycle periods and in which the cyclical peaks revealed progressively higher volumes of employment and national income. No explanation of the phenomena of secular stagnation can be adequate which is not also consistent with the phenomena of secular expansion. They are part and parcel of the same organic whole and must be accounted for together. The failure to effect such an integration is a major defect of the form of the stagnation theory examined above. What can we say about these phenomena?

A comprehensive account of the process of secular development and change would require a separate volume. The principal factors which are presumably in play, however, can be presented rather briefly. In elementary-textbook terms, the physical volume of total economic output at any time depends fundamentally on only three things: the size of the economically productive population, the character and extent of natural resources which are known to be at hand or obtainable, and the skill and intensiveness with which the population uses these natural resources. Total output can be regarded as a function of the product of these three terms. Also, if total outputs are equivalent in two different countries, the country with the smaller population will clearly have the higher average income *per capita* and the higher average standard of living. A change in any one of the three factors will produce, other things equal, a change in total output; and if the change in the factor is an enduring one, the change in total output, other things equal, will be "secular" in character. The relation between factor change and consequent output change obeys the law of diminishing returns, however, at least after some optimum-efficiency peak has been passed. For example, if the other factors remain the same, an increase in population will yield a less than proportional increase in output, because of the increasing difficulty of exploiting a given supply of resources with unaltered skills and intensiveness. So also for the other factors.

Some of the great historical increases in total output have been related chiefly to changes in the natural-resources factor. This has happened when new territories fit for habitation have been discovered or opened up, or when new supplies of those things which the current state of the economic arts and sciences regards as natural resources have been found. In some cases, on the other hand, the slow exhaustion of such supplies in the face of unchanged techniques of exploitation has gradually reduced output per man, total output itself and even total population. Most of the great historical changes in total output, however, have come about as a result of all three types of change combined. If a sweeping generalization may be hazarded, the usual first step in large increases in total output has probably been a large change in skills or a great increase in the *willingness to use* resources (as when something raises the average "secular" level of anticipations to enduringly higher levels).[1] Then follows quickly a resulting increase in the available supply of what in the light of the new techniques are now regarded as natural resources, and then, more slowly, increases in the population. The average intensiveness with which people work, in the sense of hours per week and foot-pound-seconds of effort, probably decreases under these conditions; some of the over-all gain is taken in the form of increased leisure.

The critical factor, then, is usually the way and degree in which the population utilizes natural resources. This factor includes not only the technological methods of production and exchange and the intensiveness of individual effort but also the uses made of income already received. A society which elects to hoard part of its receipts of money income is failing to exploit its natural resources to the full just as

[1] Thus the gold and silver which flowed into Europe from New Spain were both an increase in "natural resources" and, because of their effects on prices, a stimulus to anticipations. Every large secular expansion in history, I believe, has actually been accompanied and implemented by large increases in the money stock, though the "causal" relations involved have varied.

genuinely as a society which elects to spend part of each working day in bed. The society's subsequent total output will be reduced as truly in the one case as in the other.

The application of these generalizations to the position of the United States in recent years is not difficult. No decline in the total productive capacity of any important part of our supply of natural resources has taken place, and this element therefore cannot account for the fall in our total output so far below the level of the late 1920's. Nor can the change in the rate of population growth. Population growth is continuing, though at a declining rate. Nor can any lack of technical advances awaiting application itself account for the decline. Even if such a technical lack exists, which we have previously asserted to be unproved and unlikely, the direct result could only be a failure of total output to increase, not a decline. Nor can the reduction in hours of work in industry, which the New Deal has brought, be held responsible. Other things equal, it is true, fewer hours of work per week with a given population mean smaller total output. The reasons why this change has not played an important part are that both the total and the economically productive population have increased, that substantial and offsetting technological advances have been made on a wide front and—the conclusive item—that widespread unemployment has continued. The mere physical lack of sufficient labor hours therefore cannot account for the decline in total output. The rise in money wages is a different question, and will be considered later.

Rather, another of the "primary" factors just examined is chiefly responsible in the proximate sense for the decline in our total output relative to the 1920's. This factor has been the unwillingness or inability of our society to spend on goods and services a sufficiently large part of the actual increases in national money income which have been effected since 1933. Or, put the other way around, the average desire to hoard has remained abnormally high; and the *marginal* desire has also been too high with respect to

increases in current income, too low with respect to decreases, to permit even a distant approach to continuous full employment. That is, the general level of private anticipations has been low. Here we are back on familiar ground. But why have these conditions been so severely adverse in the last decade?

5

The reasons why the desire to hoard has remained high in recent years are not, I think, hard to determine. The groups whose incomes lie in the moderate and especially in the "high" ranges cannot possibly, or at least certainly will not, consume all of their current incomes and, still less, all of any increases in current income. They must therefore either hoard or invest. The managers of business enterprises, analogously, usually do not or will not pay out all of current earnings to the owners and must likewise invest or hoard the excess.

A number of major deterrents to the maintenance of the pre-1930 volume of new private investment have arisen in recent years, however, quite independently of any considerations relating to the state of investment opportunities in the strictly technical sense. These deterrents have influenced both individual investors and the managers of business enterprises, and have borne especially heavily on the volume of that new investment which is intended to effect net expansion. In consequence, the total volume of private new investment has persisted at average levels wholly inadequate to maintain anything like full employment, and hoarding has continued high. Some of the factors here in question have affected adversely the prospective yields that can be expected from most lines of business activity; others have affected the valuations placed on these prospective yields; some have done both. In terms of our earlier diagrams, they have both moved the supply-and-demand curves for new investment to the left at *given* levels of anticipations, and in addition have depressed private anticipations themselves far below the

levels that would presumably have prevailed otherwise. In consequence, the total volume of new private investment has persistently remained at levels which at most times have been wholly inadequate to provide anything like full employment in the country as a whole, and hoarding has continued high.

The relative importance of the principal factors that have had a direct and adverse effect on the general state of private anticipations since 1932–1933 cannot be appraised at all accurately, and opinions on the matter have differed widely. These factors are of familiar sorts, however, and it will suffice to list the more important among them. They include such things as distrust of the monetary and banking policies of the early New Deal period, of the regulation of the security markets and issue business, and of the results of the agricultural measures; fear of the ultimate consequences to the tax structure of protracted deficit spending and the resulting rapid rise in the public debt; fear of monetary inflation, even after substantial changes in the currency and banking legislation had ceased; fear of additional drastic interference in and competition with private business on a wide front, such as had been manifested in the public-utility field; fear of the effects of the wages-and-hours legislation on private profits; distrust of the whole philosophy of the Social Security Acts; misgivings over the progressive deterioration of the European political situation after 1935 and its implications for us; and so on through a substantial array. It is fair to say that many of these fears, except those concerning Europe, have so far not been wholly justified; in most cases, the bark of the new policies has been worse than their bite. But the mere fact that many or most investors and business men have for years viewed the future with apprehension, fearing at each period that worse was still to come out of Washington, has been sufficient to hold the general level of private anticipations and hence new private investment persistently low during most of the time after 1933. This has been especially true of net-expansion investment. As remarked elsewhere, an un-

usually large fraction of the total new investment of recent years has been made for repairs and replacements alone.

Certain other factors, however, have been of more objective character and perhaps equally important. They have operated either to increase the actual and the prospective costs of doing business or, like the decline of our exports and the abandonment of many small farms, to shut off certain markets more or less completely. The cost-raising factors, which in themselves have accomplished desirable purposes in many cases, include chiefly the various increases in wage rates which labor has demanded and the Federal government has encouraged (increases made in considerable part to offset the effect on labor incomes of the *decrease* in hours); cost-raising changes in working conditions; the costs of preparing the great volume of reports to the government which are now demanded of business (for general and for Social Security taxes and for divers other purposes), the recent minimum-wage legislation and, above all, the drastic increases in tax burdens of nearly all sorts which have been imposed since 1929. The effect of the tax increases on contemplated new investment is so important and so often overlooked as to justify more extended discussion.

6

That the increases and extensions of Federal and local taxation witnessed in the last decade have been severe is too familiar to require proof. Except for the tariff, nearly all important types of effective tax rates—Federal, state and local—have been substantially raised in recent years, and a variety of new taxes have been imposed in addition. The total tax burden, measured as a percentage of national income, has very nearly doubled in a decade.[1] Moreover, many of the

[1] According to recent estimates by the National Industrial Conference Board (*Economic Record*, Nov. 3, 1939), the total tax burden per capita in this country increased from 1929 to 1938 by 34 per cent. On these estimates, the burden measured as a fraction of national income, which itself *fell* by 21 per cent (using Department of Commerce data for income), increased by 80 per cent. This is a larger increase than in any other leading country in this period, not even excepting Germany as

most conspicuous changes have obviously been of such character that they bear heavily on either the demand side or the supply side of contemplated new investment, or on both, and thus reduce its attractiveness. In this category come nearly all of the increases in taxes on corporations, corporate income and business property, the relevant parts of the increases in individual income taxes and inheritance taxes, and the (to my mind) economically injurious taxation of realized capital gains as income.[1] Whether the increases were necessary or desirable on other grounds is not in question here; the point at issue is merely their effect on new private investment.

The reason why the recent tax changes have been especially damaging to new private investment can be made clear from a simplified example. Assume (without reference to the special form of the curves suggested in Diagrams I and II of Chap. II, above) that the effective short-period demand-and-supply schedules for new private investment funds can be represented by straight lines of equal slope, the solid lines through D and S of Diagram VIII. The marginal expected yield which will establish a short-period equilibrium between demand and supply is then m. This is the yield which the owner of the marginal unit of new investment funds can expect to receive in equilibrium, and the rate which the mar-

reported, and an increase to roughly the 1938 level in Great Britain. In Great Britain, the burden in 1938, measured as a fraction of income, was slightly *less* than in 1929.

[1] It can be argued that because of their adverse effects on calculations of net expected yield, both highly progressive taxes on other income and capital-gains taxes are disastrous. They hit especially hard those investors in the higher brackets who would otherwise take the risks of getting new enterprises started, but who must receive higher returns from the successful enterprises to offset their losses in the failures. The losses are often not realized in the same calendar years as the gains; and there are severe limitations both on the allowances for losses and on the carry-over of losses from one year to the next. Yet it is the starting of new ventures which makes much of the difference between high activity and relative stagnation in business at large. The economy, therefore, may well be killing its own golden goose. By imposing such taxes, it may be losing more from the shrinkage of total activity than it gains from a less inequitable distribution of wealth and income.

On these questions also see Chap. XIV, Sec. 4, below.

ginal user of funds can expect to pay. We may call it, briefly, the short-period equilibrium *price* of new investment capital.

Then suppose that a new proportional income tax is imposed, and suppose that it strikes equally both the suppliers of funds and those who use the investors' money; we may continue the tacit assumption that suppliers and users are different groups of people. Let the new effective demand-and-supply schedules be represented by the dotted lines through D' and S'; and for convenience in arithmetic, assume that the in-

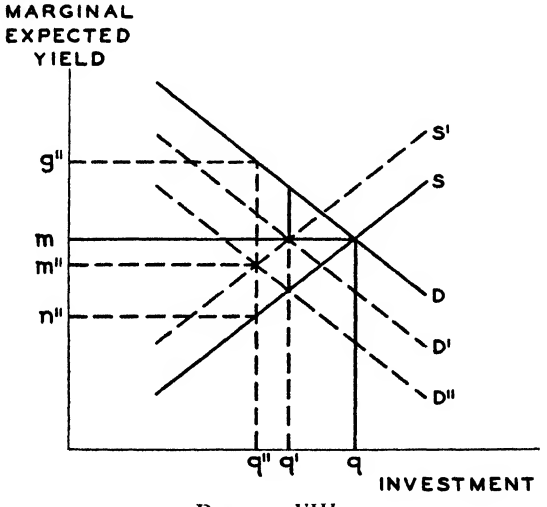

DIAGRAM VIII.

come tax is computed as a percentage of the original value of all capital that earns income, say a tax of 1 per cent of this value. The curves through D' and S' are then parallel to those through D and S. If we assume further that the general level of anticipations remains unchanged, the marginal expected price of capital which will bring about a short-period equilibrium will also be unchanged, and will remain at m (the tax falls equally on demand and on supply, and the curves are of equal though opposite slope). But the *quantities* of funds offered and demanded will obviously be reduced, as from q to q'; the *net* marginal yield *after* taxes which investors

can expect will fall; and the *gross* marginal return which users of capital must expect to receive, *before* payment of taxes and interest, will rise. That is, the tax hits *both* demand and supply; and under this double depressing influence, the volume of new investment will fall. At any time, other things equal, there are fewer investment opportunities which are expected to yield, say, 7 per cent than to yield 5 per cent.

Next, suppose that new taxes on business property are imposed, and suppose that these taxes are originally paid solely by the users of investment funds. Let the tax again be expressed, for convenience, as a percentage of the original value of all invested capital that earns income. Then the demand curve will drop, say to the dotted line through D'', and the volume of new investment will fall still farther, as to q''. In addition, in this case, the short-period equilibrium price of capital (a price which includes expected taxes for suppliers of funds, but which is net *after* expected taxes for users of funds) must decline. In terms of the diagram, as just remarked, the short-period equilibrium price of capital falls from m to m''; the marginal expected net return to suppliers of funds *after* taxes falls to n''; the marginal gross return *before* taxes, which users of capital must expect to receive if it is to be worth while for them to employ additional investment funds at all, rises to g''; and the volume of current new investment itself falls to q''. The vertical distance n''-g'' is the total expected tax burden, per unit of contemplated new investment.[1]

We have here assumed simple proportional taxes calculated as a percentage of the value of income-earning capital invested or used. When any substantial fraction of the total tax structure is progressive, as it is in the United States, the effects of increases in taxation are even more striking. Here the curves D' and D'' slope down more sharply to the right than D, as investment and hence income increase, and the curve S' slopes up more sharply than S. The reduction in new

[1] Since the slopes of the two curves are equal but opposite, the *real* burden of the new taxes will here be divided equally between demanders and suppliers of funds.

investment produced by tax increases is then even greater than in the cases just examined.[1]

Account should also be taken of another factor. Increased tax burdens, as just shown, force users of capital to restrict their commitments to undertakings in which the expected gross marginal return, before taxes, is higher than that which was thought adequate before the tax increase. At any time there must, obviously, be a smaller number of possible undertakings offering these higher marginal returns than of those offering prospects for lower returns. In addition, the degree of certainty with which this higher marginal return can be expected is usually less. Other things equal, it is less likely that at least 10 per cent will be received, for example, than that at least 6 per cent will be received. This decrease in the degree of certainty also operates independently to reduce the attractiveness and hence the volume of current new investment.[2]

Finally, over periods of time, what has been said here about "net new investment" may also come to apply in some degree to the "reinvestment" of depreciation funds in

[1] For a fresh and illuminating analysis of the effects of various kinds of taxes on new investment, see J. B. Williams, *The Theory of Investment Value* (1938), Chap. XVII. In the preceding paragraphs, I have drawn heavily on his account, and the diagram is a modification of one of his.

For a more extended examination of the problems here at issue also see D. Black, *The Incidence of Income Taxes* (1939). Black shows that under certain circumstances new income taxes not only reduce further *new* investment but also reduce the quantity and increase the price of the output of *existing* plant. I am again indebted to Prof. Carl S. Shoup for this reference, and regret that I did not learn of it until after the present study had gone to press.

[2] A quite different interpretation of the present American situation is given by Prof. G. Colm and F. Lehman in their most interesting study, "Economic Consequences of American Tax Policy," *Social Research*, 1939, Supplement. Their argument, too elaborate to examine in detail here, centers not so much on the discouragement high taxes impose on prospective investors and users of private capital as on the alleged growing shift of both the demand and the supply of investment funds away from private and into governmental or quasi-governmental hands. This shift, as they view it, is due primarily to the profound institutional changes which have been taking place in this country in recent years, especially in the relations between individuals and the government; and it can be inferred from their argument that they do not think it would be reversed in any important degree by even a drastic reduction in taxation.

replacements. To that extent, the firms involved are then likely to become investment trusts; and the money value of current national output and income, other things equal, will fall in absolute terms.

It is obvious that this whole analysis of tax burdens depends for its force on the initial assumptions about the slopes of the demand-and-supply schedules. If the schedules are highly inelastic, then even heavy increases in taxes will not cause much reduction in new investment. In actuality, it is probable that the supply schedule really is highly inelastic in severe depressions, as suggested by Diagram II in Chap. II, and again in high booms, but that throughout its middle range it is not. Moreover, even if suppliers of funds were willing to make large commitments in private industry in return for a net income close to zero, the *demand* for funds is surely anything but inelastic, except in high booms. There simply is not anything like so large a volume of investment opportunities which can be expected to yield capital users a gross marginal return of, say, 10 per cent, at any time, as of those which will yield 5 per cent.

It may also be argued that taxes varying with income cannot be evaded and that the preceding analysis hence breaks down. This is true, of course, with respect to already existing assets that are sources of income. The owner cannot escape the tax, except by selling the assets and foregoing the income. But the *prospective* investor and the prospective user of capital can always escape the tax merely by not making the contemplated commitment at all. Since investors and capital users necessarily take this possibility into account, the investment demand-and-supply schedules must be correspondingly shifted by actual or expected increases in such taxation. From a different point of view, it can also be argued that prospective capital users can nevertheless shift or evade the tax increases by raising the prices of the products turned out by the investment capital, or by reducing the prices paid to the factors of production (including capital). But if product prices are raised, in nearly all cases the

physical quantity of sales must fall, so that the net yield on capital itself will also fall (except in those relatively ephemeral situations, found when a quasi-monopolist is raising his prices toward the level of maximum monopoly profit, in which the profit per unit rises at least in proportion to the decrease in the number of units sold). If payments to factors are reduced, on the other hand, then for the economy as a whole this means a decline in income, and hence in the marginal dollar yields expected on the aggregate of contemplated new investment. In each case, therefore, and other things equal, the dollar volume of new investment will decline.

There is hence no major line of escape from the conclusion stated above, that in all important cases, actual or even merely expected increases in those taxes of which the burden varies even roughly with individual or business income from assets must necessarily reduce the volume of subsequent new private investment below what it would otherwise have been.

The particular forms the increases in our taxes have taken also help to explain the unprecedentedly low levels of market interest rates and other market yields which have prevailed in recent years. Market interest rates for private investment, and particularly short-term rates, have been low partly because of the glut of funds seeking private investment yet unable to find attractive outlets; but also, in part, because the increased tax burdens happen to fall more heavily on the users of private investment funds than on the suppliers of funds, in the first instance. Had this distribution of the initial tax burden chanced to be reversed, market rates (*i.e.*, the actual *gross* return to the investor before taxes) would have been high instead of low, but the volume of new private investment would still have been small.[1]

[1] This tax situation also explains, in largest part, the otherwise paradoxical persistence of relatively low market yields on listed securities through a period when the general level of anticipations has also been at a low average level (see Chaps. V, Secs. 1 and 2, and VI, Sec. 1). Account must likewise be taken of the fact that when anticipations are low and liquidity preferences hence high, there is a shift from less liquid to more liquid types of assets; and it is chiefly the latter which are listed, directly or indirectly, on security exchanges. It then follows that the

7

The conclusion reached in the last two sections thus is that the relatively low average levels of private investment and income since the 1932–1933 trough[1] and the high level of hoarding have not been due to any demonstrated lack of private investment opportunities in the technical sense. Rather, they have been proximately due to a variety of factors which have both lowered substantially the marginal yield that could reasonably be expected from technologically unaltered private investment opportunities, at *given* levels of private anticipations, and have also depressed private anticipations themselves severely. These factors include the large increase in tax burdens, other increases in costs, and the generally adverse reaction of the investing and business community to the New Deal's policies and philosophy as a whole, though there is no direct way of appraising the relative importance of the several factors. This explanation of the course of events since 1932–1933 hence differs substantially from that given by the current form of the "stagnation theory," which stresses partly the level of the marginal propensity to consume but chiefly the alleged deficiency of private investment opportunities in the narrower technical sense.

Overwhelming evidence that a profound change has taken place in recent years, at the very heart of the processes and

---

market yields on such assets, which are the assets for which prices are listed on the financial page of the papers, are presumably much below the average market yield for the total of *all* assets.

[1] We have not examined the period 1929–1932 in any detail. In retrospect, it does not appear, however, to offer major new problems. The downturn itself was primarily of a "normal" self-generated type, intensified by adverse economic developments first in South America (beginning in 1928) and later in Europe. It was also intensified by the effects of the long decline in residential construction that began after 1925. The unusual severity and duration of the contraction and depression, which at first seemed to have been arrested by mid-1931 but then became worse and continued to the spring of 1933, were due partly to the continuance of economic difficulties abroad but chiefly to the onset of our own successive waves of bank failures.

relations that determine the working of our economy, is also provided by the facts previously presented in Chap. IX, especially Sec. 4. We were there concerned with the incremental or marginal relations between changes in the stock of money and associated changes in the national money income. As shown graphically by Chart III in that discussion, the ratio between the two sets of changes remained extraordinarily stable for 30 years, from 1899 through 1929. The violent perturbation produced in most other areas of our economic activity by the first World War, by the resulting changes in our international economic position and by the protracted boom of the late 1920's left this ratio virtually unaltered. It and the average circular velocity of money are the only important magnitudes in our entire economic universe which showed such stability in these years.

After 1929, however, this whole picture changed abruptly and widely. Until 1929, each increase in money stock had been accompanied by an increase in national money income which, on the average, was three times as large, and each decrease in money stock by three times as large a decrease in income. From 1929 to 1933, however, the continued decreases in money stock were accompanied by decreases in income which were *five* times as large; but since 1933, the fairly continuous increases in money stock have been accompanied by increases in income which, on the average, were not three times but only 1.75 times as large. Hence the *average* relation between national money income and the money stock, which is measured by the average circular velocity of money, has come to diverge very considerably from the incremental or marginal relation. Put in another way, since 1929 the important decreases in money stock have been accompanied by decreases in spending on current output which have been proportionately much *greater* than before 1929, while increases in money stock have been accompanied by increases in spending which have been proportionately much *smaller*.[1]

[1] If the form of the relation between changes in income and changes in money stock is now really parabolic rather than linear—as suggested in Chap. IX, Sec. 4,

This is as spectacular a picture of abrupt "structural change" as one could hope to find. It is a picture of great alterations in the vital central structure of the society's pattern of response to "original" variations in money stock and in money income.

This curious behavior can be described as evidence of a large and enduring increase in what we may call "marginal pessimism." The average marginal propensities to spend and to hoard no longer have the same numerical values with respect to *increases* in money income that they have with respect to *decreases* in money income. When money income rises, people now increase their purchases of current output, but in a proportion of the increment to their incomes which is much smaller than the proportion by which they *decrease* such purchases when income falls. This pattern of behavior does not mean, of course, that there is any tendency toward a progressively smaller volume of money income and of employment. Under given general conditions, there is always a constant volume of money income which is the "equilibrium" volume for any one level of anticipations and which hence tends to be maintained (unless the marginal propensity to hoard rises to 1 or falls to zero).[1] It does mean, however, that as long as this pattern of behavior continues, it will be harder than before 1929 to raise anticipations, and hence income and employment, to enduringly higher average levels; and easier than before to depress them to enduringly lower average levels. This is true because any "original" increase in income will now raise anticipations and hence subsequent income in a proportion which is much less, on the average, than the proportion in which an equal "original" decrease in income will lower them. That is, it will now be much harder to go up the income stairs than to go down, whereas before 1929 movement was equally easy (or equally difficult) in

above—this means that as the money stock increases, income will increase at a diminishing rate of increase, hoards at an increasing rate of increase; in due course, the increase in income will actually become negative.

[1] See Chap. XI, Sec. 3, above; also Chaps. VIII, Sec. 3, and X, Secs. 2 to 6.

both directions. The marginal propensities to hoard and to spend now take widely different values according to the *direction* of the general change which is currently in process, whereas before 1929 each was uniform (at any one level of anticipations) for "secular" changes in both directions.

In this rather complex array of facts and inferences is to be found, I think, the profoundly important core of hard truth that lies behind the presentations of the "stagnation theory" that have been made in recent years. This core of hard truth can be summarized in three principal propositions. First, because of the effects of the new conditions examined in earlier sections, the increase in the money volume of private investment which is produced by the appearance of a given private investment opportunity is now substantially smaller, at each level of anticipations, than it would have been in the period before 1929—smaller, that is, relative to the size of current money income. Put the other way around, a larger stimulus than before is now needed to produce the same ultimate increase in income. Second, because of the effects of the same conditions, the average levels of anticipations themselves have been persistently much lower than before 1929. Third, because of the curious and perverse variation which has developed since 1929 in the values of the marginal propensities to hoard and to consume, depending on whether the current movement is one of expansion or of contraction, it is now harder to increase income and employment enduringly than to decrease them. Put the other way around, a given "original" increase in national money income will raise anticipations by a certain amount, other things equal, and will produce a certain enduring proportional increase in subsequent income; but an equal "original" decrease in income will produce a *relatively greater* decline in anticipations and hence a relatively greater enduring decrease in income. This new factor in the total situation is something which can be regarded as itself a by-product of the low average level at which anticipations have remained since 1929. Its effects modify the operation of the other factors.

The practical conclusions which follow from these propositions are clear enough. If the levels of national money income are to be raised enduringly to much higher levels as a result of purely private operations, part or all of at least three principal changes must be brought about. The general level of private anticipations must be raised greatly and then be kept high; the supply of private investment opportunities must be increased, and at a more rapid rate than would have been required to produce equivalent increases in national income before 1929; and the marginal propensity to consume must likewise be raised. If these changes are not achieved, it is most unlikely that the volume of privately initiated economic activity will alone be able to maintain anything remotely approaching full employment, except sporadically. That is, we shall confront a genuine "secular stagnation" of private activity. The only alternative to an intolerably high average level of unemployment will then be continued government action of some sort. What are the prospects?

8

In this section and the one next following, we deliberately abstract from any consideration of the present World Wars, of the American rearmament and defense program, and of their possible long-run effects on the American economy. The questions which these profound upheavals raise will be examined in Chap. XIV, below. In effect, we shall here write as though the date were, say, the summer of 1939. The defense for this seemingly unrealistic procedure is that unless the war completely alters our whole social and economic structure, the war's probable effects on our economic development cannot be gauged adequately except against the background of those deep-seated "secular" forces which were in operation long before the war broke out, and which may well survive it.

Abstracting from the war, then, what is the outlook for private economic activity and especially for private investment over, say, the next decade or more?

As pointed out in the last section, the core of determining factors and relations which are involved is clear enough. They turn on the question of what the society does at each point in time with *changes* in its current income. The current marginal propensity to consume determines the size of that part of any increase in income, for example, which will *not* be consumed currently. Whether this non-consumed part will be invested privately or merely be hoarded depends on the marginal yield expected from investing this amount of money in private enterprise, and on whether or not the marginal yield thus expected will attract *all* of this amount at the current general level of private anticipations. The ultimate determining factors, as already pointed out several times, are hence the marginal propensity to consume, the supply of private investment opportunities in the technical sense of the term, and the general level of private anticipations. The level of anticipations both has a direct effect and, in addition, influences the estimates of yields that are expected under varying conditions from investment opportunities which in the technical sense are unaltered.

If the general level of anticipations is left unchanged by an original increase in income, the ratio h between hoards and money stock will also remain unchanged. Then only a fraction $(1 - h)$ of an original increase I in income will be added to active money, and the enduring increase in income per year will be only $I(1 - h)v$, or Iv'. If anticipations rise, then at the limit none of the original increase in income will flow into effective hoarding; and if they fall, *all* of it may, thus leaving no enduring effect on income at all. These propositions, which we developed previously for the analysis of business-cycle mechanics,[1] are equally valid with respect to the average relations prevailing over long periods. Moreover, if there is no governmental or central-bank intervention, a given *rate* of increase in income can be sustained only if anticipations are *rising* and remain higher than before. For if anticipations are constant, the ratio h is also constant;

[1] Chap. X, Secs. 4 to 6, above.

part of the increase in income will flow into effective hoarding, thus reducing the rate of increase in income and hence depressing anticipations; and even if no self-generating contraction is started, income will then at best eventually cease expanding.[1]

Periods of sustained "secular" expansion in the money volume of private activity, with a rising trend running through several business cycles, have therefore necessarily been periods in which the general level of private anticipations has likewise had a steadily rising central tendency or trend, and in which the supply of private investment opportunities (in the technical sense) was at least not diminishing. In periods of secular contraction and stagnation, the general level of private anticipations has necessarily been either falling or constant at a low level, and the supply of private investment opportunities has been increasing, if at all, too slowly to offset the decline in anticipations.

I think it is clear that on the basis of these considerations, and even abstracting from the probable effects of the war and the defense program, the outlook for any very large, rapid and sustained expansion of private economic activity in the United States over the next decade or more is not encouraging. The most important elements in play are the general level of private anticipations and the net yield which can be expected from given amounts of new private investment. Both have been forced down, with respect to given supplies of new investment opportunities in the strictly technical sense, by increases in actual and prospective tax burdens and by other increases in costs. Anticipations have also been lowered by the unfavorable interpretation most business men and other investors have placed on the objectives and policies of the Federal Administration since 1933. There is no slightest prospect at present that any of these conditions will be materially altered in any near-by future, however; on the contrary, they are likely to be intensified if anything, even apart from the war. The present adminis-

[1] See Chaps. VIII, Sec. 3, and XI, Sec. 3.

tration showed no interest in reducing taxes before the defense emergency developed and, in view of the defense pressures, is not now likely to do so, even if such a course seemed desirable on theoretical grounds. Similarly, even if a "sound" Republican administration is elected in 1944, precisely its own "sound" fiscal principles would likewise prevent it from proposing substantial tax reductions while the public debt is large and growing. It also seems to me inconceivable that any political administration, no matter how "sound," could now or would in the future propose undoing any large part of the improvements in labor's position which have been effected in recent years. Apart from possible emergency situations in the defense industries, making any substantial inroads on these improvements would be both socially undesirable and probably suicidal from the point of view of practical politics. The costs which these improvements have imposed on business enterprise are therefore not likely to be reduced very much.

The prospects both with respect to tax burdens and with respect to labor costs thus do not give one much justification for expecting a sustained secular rise either in the level of private anticipations or in the net yield which can be expected from given amounts of new private investment. The outlook with respect to other critical factors in the total situation is also not particularly bright. The supply of private investment opportunities in the strictly technical sense will continue to increase steadily, I think; but on the present prospects, it is not likely to increase *rapidly* enough in the near-by future to offset more than partly the probable relatively low level of private anticipations. Moreover, many of the technical improvements now in sight are sharply labor saving, so that their adoption is likely to produce a series of acute though "transitional" waves of unemployment in the industries affected. Nor do our international economic relations, which stimulated so much trade and investment before 1929, offer much hope for expanding private activity, no matter who wins the war. Finally, with our present forms of socio-

economic organization and our present patterns of distribution of income and wealth, there is little likelihood that the average marginal propensity to consume will rise in important degree voluntarily.

On all these counts, therefore, and apart from the effects of the war, the long-run prospects with respect to the average volume of privately initiated economic activity are not very encouraging. Barring some utterly unforeseen transformation of our economic and political organization or of our techniques of production and distribution, it is most unlikely that privately initiated activity alone will be able to maintain the *average* levels of total income and employment at anything like the maxima which are theoretically attainable and socially necessary. For relatively brief periods, in cyclical booms, it may succeed. But even here the prospects are not very good, and the average through time will almost certainly be far too low. Put the other way around, the average volume of unemployment in privately initiated activities is likely to remain high over time, and much higher than the country's social conscience will tolerate.

9

If the preceding forecast of secular stagnation in private activity for a number of years to come is at all correct, war apart, what should be done about it? In the last chapter, it was argued that government action is essential to combat cyclical unemployment. Precisely the same conclusions, buttressed by precisely the same argument, apply to secular unemployment. Indeed, secular unemployment can be regarded as simply average cyclical unemployment viewed over a period of a number of business cycles taken together. Government action to combat it is as necessary in the one case as in the other.

Only three measures seem likely to be of much practical consequence, war apart. They have all been referred to in the preceding chapter. One is the taxation of increases in the relative size of money hoards, above reasonable working

and emergency balances, which are held by individuals and by business firms. Such taxation is difficult to make effective with respect to currency hoards, but is practicable for bank deposits if the obvious precautions are taken against evasion devices (such as chaneling funds into security transactions, holding deposits under false names, and the like). The purpose of the tax is, of course, to stimulate current spending on goods and services, whether for consumption or for investment, and to maintain it at a high level.

A second measure is the *reduction* of those taxes that bear on private investment, and particularly the ones that are levied directly on the incomes of business enterprises. The purpose of the reduction is to increase the net yield which can be expected from given opportunities for private investment and hence its volume, and thus to increase private employment. The chief practical difficulty is that many of the taxes in question are levied by state and local governments. It would be almost impossible to bring about any substantial reduction here without then supplementing the revenues of these governments from Federal sources, since their borrowing power (as previously pointed out) is limited. The questions of administration and even of general policy which such supplementation would involve are serious, but will not be discussed here. Nor will anything further be said at this point about specific tax changes themselves. The general objectives are clear enough.[1]

The third and last measure is government deficit spending, also discussed at length in the last chapter. Since the other two measures seem likely to be of rather limited effect, this must be the chief weapon for combatting secular unemployment in private industry, war again apart. The spending should be carried on at rates which will keep total employment as close to the theoretically attainable maxima as is possible without inducing inflationary price increases. The adoption of this policy will amost inevitably lead to a steady

[1] But see the discussion of the Federal corporation income tax in Chap. XIV, Sec. 4, below.

though not rapid rise in the public debt, if our expectation of secularly low levels of private activity is correct and if, as just proposed, certain taxes are reduced. It was also shown in the last chapter, however, that the latter rise need occasion no misgiving in itself and that the chief danger it entails—the danger of a *sudden* spending on goods and services of hoards previously accumulated out of government spending, or of funds obtained by sales of government securities, and the consequent danger of inflationary price increases—can be countered fairly promptly and effectively.

There are many who will profoundly dislike and distrust these proposals, especially the proposal for indefinitely continued government deficit spending. Under our present forms of economic and political organization, however, there seem to be no major acceptable alternatives. We will not ourselves, in the aggregate, voluntarily spend all of any increases in our current incomes on the current purchase of goods and services, but insist on hoarding a part of each increase. By so doing, we thereby make some measure of subsequent unemployment in private industry inevitable. Yet it is a paramount duty of society as a whole, in a democracy, to furnish reasonable opportunities for employment to every person who wants to work. It is therefore up to the government to persuade us, coerce us or delude us, as the case may be, into doing for the common welfare and for our own individual good that which we will not voluntarily do ourselves. When undertaken to combat unemployment in private enterprise, a properly planned program of government deficit-spending operations hurts nobody and benefits everybody. None lose, and all gain.

Chapter XIV

TAXATION, INFLATION AND THE DEFENSE PROGRAM

I

WITHIN the last year and a half, Europe has again been plunged into the inferno of war. The continental democracies have either collapsed or come to terms with Germany, and the position of Great Britain has become tragically precarious. The United States, at last realizing the ominous threat to its own interests and even to its own existence which is inherent in Great Britain's peril, has hastily embarked on a vast program of armament construction and military training.

At first glance, these events seem to have deprived most of the questions that are discussed in the present book of any large current importance. Such is far from being the case. On the contrary, a number of the most urgent and most substantial practical problems connected with the financing of the defense program, and with the interpretation and control of its probable economic effects, cannot be solved adequately except with the aid of intellectual and statistical tools of the types examined in earlier chapters. Nor can the post-war economic outlook be appraised comprehensively except with these tools. As long as freedom of private decision and action is maintained in the great majority of our economic and political activities, as it still is and as it must be if we are to have anything worth defending, much the same processes and relations will operate under the shadow of war as in peacetime. Their directions and proximate motivations will shift in some degree, to fit the pattern of defense needs and perhaps in response to patriotic stimuli,

but in most respects their essential character will remain unchanged.

On the content and total financial side of the defense program, of course, we can express no judgment here. The country has virtually given the military and naval experts carte blanche to determine what shall be built, in what quantities and in what order; what men shall be called up and trained to what tasks, and how rapidly considerations of national safety require that these things be done. In January, 1941, the total actual appropriations made for defense stood at some 24 billions of dollars, with another 4 billion dollars of contracts authorized but not appropriated for, and still larger appropriations in sight; and it was expected that actual spending under this program would not reach a peak rate before the spring of 1942. The defense spending already planned will not be completed before 1947, so that the spending *per year* will not be quite so staggering a sum as the total. If we formally enter the war ourselves, both the total volume and the rate of defense spending will doubtless be greatly increased. Such are the major financial dimensions of the present defense plan; we must simply take them as a datum.[1]

There are a number of problems connected with the financing of this vast program, however, and with its probable economic effects, on which a good deal of light is cast by the conclusions reached in earlier chapters. The principal problems are as follows: first, the probable immediate effect of the defense program on the volume and the directions of American business activity in general; second, its effect on

[1] After the present book went to press, appropriations for another 7 billion dollars were passed in connection with the so-called Lease-Lend Act, and still others are pending. These are not all net additions to the figures given in the text above, however; and at least a part of the sums involved will merely take the place of sums the British would otherwise spend here themselves (though such spending is none the less "income-increasing" in either case, in largest part). Moreover, only a fraction of the money appropriated can presumably be spent over the next year or two, which is the period of chief interest in the present chapter. The new appropriations therefore do not seriously invalidate the illustrative computations which will be presented below.

unemployment; third, the methods which should be used to finance the program; fourth, the likelihood that defense spending and other factors will bring about a general inflationary rise in prices and individual money incomes; fifth, the devices that should be used to combat such inflation; and finally, the adjustment of the American economy to the probable post-war slump and to the world conditions likely to prevail in subsequent years. The present chapter will be concerned with these questions.

2

The defense program, if carried out on anything like the scale now contemplated, will give us at least one "business cycle" in which many lines of economic activity will maintain high levels for prolonged periods. These lines include, of course, the industries making armaments and other military and naval supplies required in large quantities, and those making tools and other equipment for the first set of industries. In both of these groups, a number of industries are already operating virtually at capacity and are now expanding their plants. The industries which may be expected to reach high levels of activity also include those providing some of the requisite raw materials, but by no means all. Large stocks of many raw materials and foodstuffs are already on hand, and the industries involved cannot look forward to high activity until these stocks have been greatly reduced. Finally, with all this expansion of output in sight and hence an expansion in the total of individual incomes, it seems reasonable to expect that the industries making products on which individuals spend their own money will also undergo substantial expansions: that is, the consumers'-goods industries, and especially those making durable consumers' goods, of which purchases are largely postponed in bad times and greatly increased in good times.

For these and other reasons, the "business cycle" which will be produced by defense spending will be of a rather curious type. In the first place, obviously, it will not be

primarily self-generating in origin, but will spring largely from the effects of government spending for military purposes. As the expansion of the defense industries moves along, however, and as the individual incomes received from such industries grow in size, spending on non-defense products will increase, and this may induce a "self-generating" type of expansion in the industries making such products. Indeed, if the expansion of defense spending is great enough and protracted enough, such a development is inevitable. In the second place, the very expansion of certain lines of production under the stimulus of defense requirements will reduce the supplies of both materials and men available for other lines of production, quite independently of price changes as such, and may well compel an absolute contraction in the latter lines (for example, in private passenger-car production). In both these respects, the expansion now getting under way differs profoundly from the purely self-generating pattern.

In the third place, the total volume of unemployment is likely to remain relatively large. A substantial proportion of those now reported as unemployed cannot actually be absorbed into private employment because of age, health, lack of necessary skills, or that deterioration of habits of systematic work which is one of the most serious consequences of prolonged unemployment itself; and similarly cannot be absorbed into the armed forces for reasons of age, health, dependency or sex. Another substantial and more or less permanent volume of "frictional" unemployment, due to maladjustments in the distribution of labor forces as output in specific lines varies, must also be included here. The individuals caught in this type of unemployment shift constantly, but their total number is always large. Finally, to date those industries that have been expanding their labor forces have done so in considerable part by attracting workers from farms, submarginal occupations and the schools, in the hope of thus avoiding labor troubles. Such shifts cause little decline in the total current output

of the occupations losing these workers, it is true, but they also do little to reduce the unemployment rolls of the WPA, the relief bureaus or other agencies. It will take an acute (and therefore probably brief) labor shortage to induce most firms to change their policies drastically in this respect.

For these reasons the total volume of unemployment, if people on WPA and work relief be included, seems unlikely to fall much below 3 million or more (somewhat less than half the 1938–1939 estimate), even at the height of the impending boom. Unemployment will hence constitute a continuing and large burden on the government budget, and one which is over and above the burden of defense spending proper. It is a burden which if only because of political pressures, and quite apart from any question of social ethics, is unlikely to be reduced much except as unemployment itself falls.[1]

Because of its origin, its probable internal character and the probable persistence of a large volume of unemployment even to its peak, the "business cycle" which defense spending has already set in motion is therefore likely to be quite different from the "self-generating" type of cycle examined in earlier chapters. To this point, it has also given little sign of resembling the corresponding phase of the last "war cycle," the long cyclical expansion of 1915–1918. Although some classes of prices have now moved up a little, there has been no marked buying wave on the part of the consuming public at large and hence no real beginning, as yet, of the inflationary spiral. Whether or not this spiral is in fact likely to develop is a question that will be examined presently.

3

How can the defense program be financed; how should it be financed; how will it be financed? Of these questions the last, paradoxically enough, is perhaps the easiest to answer.

It is not possible, however, to begin with the defense

[1] Even if the unemployment figure falls to 2 millions, the argument in the following pages is not much affected.

expenditures taken in isolation, for they will not be financed separately. Instead, let us consider the Federal budget as a whole. In 1929, total Federal expenditures were roughly 4 billion dollars for the fiscal year ending June 30, and tax receipts were slightly higher. In fiscal 1933, expenditures were roughly the same as in 1929, but tax receipts had fallen to 2 billion dollars. By fiscal 1939, tax receipts were at 6 billion dollars, but expenditures had risen to 9 billion dollars; and for fiscal 1940, the figures are 6 billion and 10 billion dollars, respectively. The preliminary estimates for fiscal 1941 are 7 billion dollars of tax receipts and 13 billion dollars of expenditures, and, for fiscal 1942, are 8 to 10 billion and 18 billion dollars,[1] respectively—provided we keep out of the war. If we go in, expenditures will rise much higher. Thus the Federal deficit for fiscal 1940 was roughly 4 billion dollars, for fiscal 1941 is estimated at 6 billion dollars, and for fiscal 1942 at perhaps 9 billion dollars. Put in another way, for fiscal 1941 and 1942 combined we shall meet less than 55 per cent of our Federal expenditures from taxation, and shall obtain the rest by borrowing. Rather more than the whole of the estimated increase in expenditures over 1939 (from 9 billion dollars a year in fiscal 1939 to 18 billion dollars a year in fiscal 1942) represents actual or anticipated spending on defense.[2] The total Federal expenditures in the peak years of the first World War were 13 billion dollars in fiscal 1918 and 19 billion dollars in fiscal 1919.

Is this financing program the best one we can devise or even a good one? It has been criticized from at least three points of view. Some have said that we should try to meet the whole of the Federal expenditures out of taxation, and thus avoid burdening future generations with our debts. Others have said that even the present tax burden is too

[1] See the news report in the *New York Times*, Dec. 28, 1940. Recent appropriations, especially in connection with the Lease-Lend Act, are likely to make these deficits still larger.

[2] Some reduction in a number of ordinary budget items is expected, though this will be offset in part by increased interest costs. No *large* reduction seems likely to be politically feasible, except as unemployment falls.

high to be equitable, or at least that lower tax *rates* would yield larger total revenues.[1] Still others, without committing themselves on the question of the absolute size of the tax burden, have said that the present Federal tax structure is gravely defective. It is asserted to be crippling that private business initiative and activity, on which so much of any defense program must actually depend in a democracy, out of all proportion to the tax revenues likely to be obtained.

It is certainly not impossible for us to meet the whole of our Federal expenditures out of taxation if we wish to, even at the high rate of spending now contemplated for fiscal 1942. The expenditures of at least 18 billion dollars for that year, plus state and local taxes of something over 6 billion dollars net, still make a lower "real" burden, measured as a fraction of the expected national money income in 1942, than either Germany or Great Britain was carrying in 1939–1940. But we can do this only at a substantial further sacrifice in terms of the standard of living of the average man; even taxing the "rich man" entirely out of existence would not help us meet more than a part of the additional burden. We have not got to such a point of national crisis as to make this further sacrifice in the average standard of living seem politically feasible.

Yet if large deficit spending continues as we approach the maximum practically attainable volume of employment, some degree of "inflation" must result on any definition of the latter term: this proposition will be elaborated later. It is hence too obvious to require discussion that as we approach full employment we should raise the rates and broaden the scope of our tax system sufficiently to meet all current expenditures out of tax proceeds. It seems equally obvious, however, that both political opposition to increased taxation on the lower and middle income groups, and the substantial lag between the passage of legislation and the receipt of resulting revenues which appears in most cases, are almost certain to prevent complete achievement of this

[1] The two parts of this proposition are not actually cognate, however.

ideal objective. Therefore, we shall undoubtedly continue to have large annual deficits as long as the emergency defense program continues.

To the contention that lower tax rates would yield larger total revenues, no general answer can be made. This answer depends on the particular tax held in mind and its repercussions on income. The converse of the proposition is valid for many property taxes (not levied, of course, by the Federal government), in the sense that when rates are "too high" relative to contemporary circumstances, many properties pass into the hands of the taxing authorities for non-payment. It can perhaps be argued, therefore, that the original proposition itself is also true. The proposition is probably likewise valid for very high sales taxes, on the analogy of the theoretical analysis of monopoly prices. With respect to taxes falling on business income, the proposition is usually untrue for periods of perhaps a year or two. As argued in the last chapter, however, it may well hold true with respect to longer periods. Other things equal, lower tax rates will encourage a larger volume of new investment (in the sense of the purchase of additional plant and the like) and hence may bring a volume of business income into existence which is larger in proportion than the decrease in the tax rate. The same considerations apply to individual income taxes so far as the individual is a prospective investor (in the sense just indicated), but not otherwise. If the individual is not a prospective investor in any important degree or if he invests more or less without regard to prospective tax burdens, lowering the tax rate will not increase his future income.

These and other considerations enable us to reach certain conclusions about the present Federal tax system, and about the changes in it which seem desirable. Any tax system, unless its burdens are rigidly proportional to income, can be viewed as simply a device for effecting a compulsory redistribution of the national income itself. The redistribution is largely a method of obtaining goods and services which the society as a whole wants. Then with a given total sum to be

raised, a "good" tax system is one which diffuses the burden through the society in a way thought to be fairly equitable, as by some arrangement for progressive taxes falling on all save perhaps the lowest income groups; and is also one which works to produce the minimum possible reduction in that income flow which is the source of the tax revenues themselves. Using these two criteria, what changes, if any, should be effected in the present Federal tax system in connection with the financing of the defense program?

4

First, it is coming to be generally agreed among students that there is little to be gained by raising the upper brackets of the individual income-tax rates, but that the rates in the lower and middle brackets should be increased substantially and that the present exemptions should be much reduced. At present, the great numerical majority of our people pay no income tax, and indeed pay no Federal tax at all of whose existence and burdens they are keenly aware.[1] This is undesirable both from the fiscal point of view and with respect to the development of an electorate which is alert to Federal problems and policies. The consciousness of paying taxes should not be a privilege confined to people of means! In general, taxes on the lower and lower middle income brackets do not reduce materially the income flow in those brackets. Reductions in the consumption-expenditures of the taxpayers involved are roughly offset, for the country as a whole, by the increases in comparable expenditures made by those on the Federal pay rolls.

At the same time, however, two other changes in the opposite direction should be made in the individual income tax. Both changes are intended to increase the inducements to private investment, and thus to raise the average level of employment over time. One is the abolition of the taxation

[1] Most indirect Federal taxes, even on tobacco and spirits, evoke little attention or protest from the average taxpayer. The case is quite different with direct taxes.

of capital gains, and of allowances for the corresponding losses. This was discussed at an earlier point.[1] The realization of a so-called capital gain has nothing to do with the current flow of production of goods and services, and should not be taxed as "income." The other, which is perhaps more arguable, is the exemption at least from surtaxes, and for a period of perhaps 5 years from the start, of income from bona fide new private investment, whether made in issues of "new-capital" securities of business enterprises or directly in other new equities and debts of such enterprises. Each of these two changes would improve both the yield and the risk factor in private investment, and I think would sufficiently increase the national income over time to yield substantially larger rather than smaller tax revenues.

Second, however, I think—contrary to the opinion of many students—that the present Federal normal corporate-income tax rate is now at an indefensibly high level (24 per cent on all but the smallest corporations) and that it should be drastically reduced. The general reasons for this view are the ones set out in the preceding chapter. Presumably, we desire to retain the private business enterprise as the fundamental unit in our economic system. But the combined burden of Federal, state and local taxation on business enterprises as such is making it increasingly difficult for business enterprises to maintain that internal growth without which our economy as a whole must stagnate. The present corporate-income taxes in particular operate, I believe, as a severe deterrent to the reinvestment by business enterprises of their own earnings in their own activities, because under present tax conditions only a fraction of the investment opportunities currently available offer a prospect for returns sufficiently large to cover both the risk element and the certainty of high taxes on any net gains. This may likewise be true to some extent, over time, even of the "reinvestment" of accrued depreciation reserves in replace-

[1] See Chap. XIII, Sec. 6, and the second footnote therein.

ments.[1] These taxes on the incomes of business enterprise operate to reduce very heavily, I believe, that progressive expansion in business income itself, and hence in the resulting individual incomes, which would otherwise develop. The place to tax such income flows is on their receipt by individuals, not by business enterprises. The only major exception should be in the case of "hoarding" by business enterprises. If enterprises accumulate undistributed earnings either in the form of cash, or in the form of securities of non-controlled enterprises or of governments, thus failing to reinvest in their own operations, these "hoards" should be taxed heavily. This latter problem will be discussed in a moment.[2]

It will be objected by many that it makes little difference whether business income is taxed at its receipt by enterprises or not until its receipt by individuals; the "real" burden is the same in either case. With this contention, however, I disagree. It would perhaps be defensible as a rough approximation, if stockholders received credits on their own individual income-tax payments for income taxes paid by the corporations; but under our present laws, even this is not the case. Moreover, much of the net new investment in corporation plant and the like, perhaps 30 or 40 per cent on the average, usually consists of the plowing back of previous earnings which were never distributed to the shareholders. Such reinvestment operations are actually made chiefly in response to decisions by the corporation's directors, not by individual stockholders acting in any truly democratic and independent fashion. These decisions of directors are heavily and adversely influenced by high taxes on corporate income, whereas they are affected but little by high and even sharply progressive taxes on *individual* income. The income already

[1] To this extent, the company then really becomes an investment trust—as has happened in a number of cases.

[2] It can also be argued that the corporate-income tax discriminates unfairly against shareholders and in favor of corporate bondholders, since the individual incomes of the latter are not directly affected by the tax.

paid to and received by individuals is not what is being risked by the reinvestment operation.

In other words, a substantial part of corporate income never really comes under the effective control of the individual stockholders at all. The use made of it is determined, other things equal, by the prospective taxes on corporate income, not by those on individual income. If the corporate income tax is "too high," the non-distributed part of the corporation's income will either be held in cash or be put into previously issued securities and the like, instead of being reinvested in the enterprise. The subsequent *increases* in the total flow of business and corporate income, which would otherwise have resulted from the plowing back of earnings, will then be reduced or even prevented. Over time, the same considerations may also apply to some extent even to the reinvestment of depreciation reserves. Thus high corporate-income taxes reduce the future expansion of income, and may even reduce income itself in absolute terms, to an extent not characteristic of individual income taxes. They should, therefore, be greatly reduced or even be abolished outright. As in the case of the individual income tax, capital gains and losses should also be excluded from the computation.[1]

It is obvious that reducing the Federal normal tax on corporate income sharply will produce an immediate decline in revenues, and this is in itself undesirable. Over a period of several years taken together, however, I believe that the probably resulting expansion in the flow of incomes to individuals and in the receipts from taxes on such incomes (plus the receipts from the taxes on "hoards" proposed below) will again produce a larger total of Federal revenue from these sources than the present tax structure.

Third, in the main, these conclusions do *not* apply to the Federal excess-profits tax proper, as applied in the present

[1] Reduction or abolition of the corporation income tax would also improve the distribution of income when the contemporary taxation of individual incomes is progressive, since the corporation income tax itself strikes individual incomes merely proportionately.

emergency. Such excess profits will be obtained largely either from direct defense spending or (possibly) from the price inflation this spending may engender, not from any expansion of private investment in response to "ordinary" peacetime motivations. Taxing such excesses, above a reasonable return on the capital involved, therefore cannot do much to restrict the present or future income flow itself.[1] Rather, the excess-profits tax rates should be raised much higher for the duration of the present defense emergency. When the emergency is over, however, this tax should be abolished entirely; it will then fall in the same category as the present normal corporate-income tax.

Fourth, in order to make the proposed reduction in the corporate normal income tax accomplish its intended purpose and in order to tax those business earnings which are neither distributed to individuals nor reinvested in goods and services, any increases in the *absolute* size of business "hoards" should be heavily taxed. These increases in "hoards" include all increases in the holdings of money between one predetermined accounting date and the next (but increases in working cash required by the growth of the business itself must be allowed for) and should also be defined, for these purposes, to include all increases in holdings of securities and other claims and titles, except purchases of genuine "new-capital" issues floated by other business firms or by

[1] But this does not apply to new investment made directly to promote the defense program itself, rather than in response to long-run anticipations of profit from purely private operations. Firms making such investments should be protected from any substantial risk of losing the capital involved. The objectives of the amortization provisions of the present law are therefore eminently defensible and should be extended to cover all such cases. On the other hand, the laws must not be so drawn and administered that the government pays for the new plant in the form of high prices for the product, allows the firms involved to amortize the cost of the plant tax-free over a relatively short period, lets the firms add the whole cost of the plant to their invested-capital base in computing the excess profits tax, and then lets the firms keep the plants themselves after the defense emergency is past! This would be tantamount to paying for the same thing several times over and seems actually to have happened in many cases in the last war. It can be largely prevented, of course, by proper tax accounting in handling the depreciation and invested-capital accounts.

the government (but the so-called "financial" institutions' such as banks and insurance companies, should not be subjected to this limitation on security purchases).[1] The technical problems of determining the size of legitimate increases in working cash, just referred to, and of establishing reasonable accounting dates are also substantial. The character of these problems is especially clear in the case of a firm whose operations show marked seasonal fluctuations. Such a firm may have almost no cash holdings at certain seasons, when the volume of its goods in process and stocks on hand is large, but at other seasons it will have large cash balances and almost no goods in process or stocks—all with no change in the money value of its true working capital and with no true change in its "hoards." Such fluctuations must be allowed for in the selection of accounting dates. But if such a firm increases its "hoards" between one year and the next, with no proportional increase in sales (commonly as a result of deferring depreciation or of reducing current output), this is an increase in "hoards" and should be taxed.

In addition, to check evasions of this tax and for other reasons, increases in money hoards held by individuals above some absolute limit, or above some proportion of income, should be heavily taxed, so far as ascertainable, on the basis of reasonable accounting dates and after allowance for the position of those individuals who own unincorporated businesses.[2] Increases in individual security holdings, however, should not be taxed. In actuality, this proposed tax on individual hoards will be difficult to administer except for individuals holding large bank deposits, but even so

[1] What it is sought to accomplish by this proposal is hence presumably identical with one objective of the ill-conceived tax on undistributed profits. The proposal is different from the tax on increases in the *relative* size of hoards suggested in Chaps. XII and XIII, above, to combat cyclical and secular unemployment. Reference may be made again to the analogous proposal of C. W. Hazelett in his *Incentive Taxation* (1936; 3d ed., 1939).

[2] For similar reasons—to reduce evasions—a small tax should probably be placed on bank reserves in excess of, say, 10 per cent of the current reserve requirements.

it will reduce evasions of the tax on business hoards fairly effectively.

Fifth, the present exemption in the Federal tax on inheritances should be greatly reduced, but the rate on small inheritances (say up to $100,000) should be kept relatively low, and a reasonable provision should be worked out to give credit for state taxes; these last should probably be allowed priority. The rates of gift taxes should also be raised.

Finally, in certain circumstances, a Federal tax on retail sales (including merchandise, services and rents) may become necessary. This tax will be examined in more detail in Sec. 7, below.

The various Federal tax proposals just put forward can be summarized as follows: (1) Increase the individual income tax rates in the middle and lower brackets, and lower the present exemption heavily; (2) lower the normal corporation income tax rate sharply; (3) increase the excess-profits tax proper during the defense emergency, but thereafter abolish it; (4) impose heavy taxes on business "hoards," as defined, and on individual "hoards," above some limit; (5) lower the present exemptions for Federal inheritance taxes greatly, but keep the rate on the smaller inheritances low, and increase the gift-tax rates; (6) as a distasteful but probably necessary device, impose a general Federal tax on retail sales.

These measures as a whole will materially increase the Federal tax revenues; and although they will not balance the present budgets, they will reduce the Federal deficits to figures much lower than those now contemplated relative to the rates of expenditure now planned.

5

Even with these revisions, Federal tax revenues are thus certain to fall far short of defraying currently the enormous expenditures for defense which are now proposed. The balance will have to be made up currently by further large-scale Federal borrowing. Three urgent questions immediately

arise: Will this deficit spending bring on "inflation"; if so, how soon; and what can be done to anticipate, control and counteract the inflation?

The term "inflation" itself has no one unique and unambiguous meaning or measure. We may say that when the general average of prices (whatever that term means!) is constant, there is neither inflation nor deflation. If there is a general crop failure, however, and if a broad average of prices hence rises, is this "inflation?" Again, over periods of time, techniques of production usually improve and usually bring about lower unit costs in "real" terms. Except under monopoly conditions, prices then fall. Is this fall "deflation"; and if prices are instead kept stable, by somehow increasing the effective money supply, is not this operation really "inflation"? Or is inflation to be measured in terms merely of changes in the money supply itself? If so, we have had an enormous (70 per cent) inflation in this country since 1933, though wholesale prices are now only 18 per cent above 1933 and are actually lower than they were 6 years ago, in 1935. Or, finally, we can attempt to measure inflation in terms of average money incomes per capita of the population actually employed. Using rough estimates of the volume of employment in the several years, on this basis the average income per capita of the population actually employed in 1939 was some 16 or 17 per cent lower than in 1929 (nearly the same as the relative change in wholesale prices) but was perhaps 45 per cent *greater* than in 1933. That is, on this basis we have had a 45 per cent inflation since 1933, but on the other two bases (wholesale prices and money supply) we have had inflations of 18 and 70 per cent, respectively. Which is the "true" measure? Or are all these changes simply reflections of the partial recovery of business activity from the "abnormally" low levels of 1932–1933, none of which should be stigmatized as evidences of "inflation"?

Without attempting to answer this last question immediately, let us set up, instead, a slightly different criterion. Suppose that the economy is already close to what is, for

practical purposes, full employment and "capacity" production in most lines, so that material increases in output in one direction can actually be achieved only by decreasing output in others. In this situation, any large increase in the total money volume of current spending on new goods and services, and hence in the individual and business incomes received from current production, cannot bring about much increase in the *physical* volume of current output, at least within short periods, since by hypothesis output is already near capacity. The short-run effect will be felt chiefly in prices alone. We can therefore make a preliminary generalization, and define inflation as any increase in the money volume of current spending which is greater in relative terms than the current changes in physical output, when output is already in the general neighborhood of "capacity." This is clearly defective, however, for we care neither about *all* spending nor about *all* output. What the government pays for army tanks, for example, is not *in itself* a matter of personal concern to any individual; the individual is concerned only with the money income he may himself receive from tank production, and with what he can do with the money when he gets it.

We shall therefore, instead, arbitrarily redefine "inflation" in the short period as being any substantial increase in the money volume of current individual spending on *consumers'* goods and services, when the physical output of such goods and services is already in the general neighborhood of attainable capacity volumes, which is greater in proportion than the amount of the current increase in this physical output divided by an index of average physical productivity per man hour. Then if there is no inflation, the average price of consumers' goods and services will vary near full employment, if at all, only with inverse movements of average physical productivity. Or, to put the same propositions in another form, we define inflation in the short period as any increase in the average price of consumers' goods and services, after adjustment for changes in average

physical productivity and provided the economy has already approached the neighborhood of attainable full employment.[1]

On the basis of this definition of inflation, we can now make some rough estimates of the imminence and the probable dimensions of inflation in this country, so far as the inflation will be due to government deficit spending. Our procedure will be based on three principal steps. First, we shall attempt to determine the maximum amount by which the national money volume of consumer spending can be increased in the next year or two *without* incurring inflation. Taking the most optimistic alternative to start with, we shall estimate the total number of persons now employed who can possibly be drawn into private industry, shall assume that *all* of these persons go into the consumers'-goods industries, and shall further assume that no bottlenecks or other production difficulties develop in these industries, so that their physical output (divided by an index of physical productivity per man) will expand *pari passu* with the increase in employment in these industries. Multiplying this possible increase in employment by the average addition to national money income, which will probably result from the employment of one additional man, gives the total possible increase in the individual money incomes received from these industries which can be achieved without incurring "inflation." This maximum possible increase in individual incomes in such industries is also, however, substantially the same as the total possible increase in the

[1] It is clearly *likely* that increases in the prices of government supplies will also react on consumers'-goods prices, but they need not, and are not themselves "inflation." Nor are increases in the prices of raw materials, of other producers' goods in general, or of anything else not bought by individuals for consumption in themselves "inflation."

A shift in the distribution of current spending from investment to consumption, by releasing labor from the investment-goods industries, would make an increased physical output of consumers' goods possible even after "full" employment had been reached. A shift of spending in this direction, however, is not likely to occur in the expansion phase except at the very peak of a boom; and the redistribution of the supply of labor is not likely to be complete enough to prevent a rise in the prices of consumers' goods.

money volume of the sales of such industries to consumers which can be achieved without inflation; for the two totals, proceeds from sales to consumers and resulting money incomes, are always nearly equal.[1] But sales to consumers are identical with the money volume of consumer spending. Hence when we have determined the total increase in the one which can be achieved without inflation, we have also determined the possible increase in the other. This maximum increase in consumer spending which can be achieved without inflation is our first desideratum. The results thus obtained must then be qualified, however, to allow for the prospective actual increase of employment in the defense industries and the armed forces, which will reduce the increase possible in the consumers'-goods industries, and also for changes in hours of work and rates of pay and the like.

Second, we shall attempt to determine the increases in the national money income which will actually result from government deficit spending. We shall assume that this deficit spending is financed either by drawing on previously existing "hoards" of money or (more probably) by creating new money—as in the case of purchases of government securities effected through the creation of additional deposits. In either case, an addition to the supply of "active" money results. We shall then multiply the estimated deficit for each year by the average marginal ratio which prevailed, in 1933–1939, between annual increases in money stock and increases in national money income; this ratio was 1.75.[2]

[1] Except to the extent that business firms "accumulate" money or "hoard" (see Appendix IV, below). The latter operations are small in times of general expansion and more commonly negative.

[2] See Chap. IX, Sec. 4. The available evidence suggests that this ratio has changed but little since 1939.

This procedure is legitimate for estimating short-run results even if the new government securities are purchased entirely from previously idle money hoards. The resulting increase in government spending will increase subsequent income as genuinely as if the spending were initially financed entirely by the creation of new money, and at the outset will do so in substantially the indicated ratio. For those individuals or firms who thus dishoard, it is true, the relative desire to hold actual

We thus obtain the second desideratum, the prospective increases in national money income due to deficit spending by the government. This procedure involves the assumption, however, that only the same percentage of any increase in individual or business income will be "hoarded" in the next year or two as was hoarded in the average of the years 1933–1939. We must therefore also consider the possible effects of hoarding higher and lower percentages.

Finally, if *all* of each increase in individual money incomes were actually spent on consumers' goods and services, a simple comparison of the first set of estimates with the second would give us an immediate answer to the question we originally set out to solve: if and when inflation will set in. When income has expanded by such an amount that no further increase in consumer spending is possible without inflation, then any further increase in income must produce inflation itself. But not all of each increase in income will be consumed. A part will be hoarded, and a part spent on net new investment. The probable average additions to hoards are already allowed for in the assumed marginal income-money relation, and need not be counted again. For the relative size of expenditures on net new investment, we shall use Dr. Kuznets' estimate of the ratios prevailing in another period of expansion, 1923–1928; the average was 11.8 per cent of the national income.[1] This ratio we shall

money will have fallen; and the *average* ratio of money hoards to money stock or to current income, for the country as a whole, will therefore fall too. But the relative desire to hoard on the part of the *rest* of the individuals and firms in the country will remain unchanged, or will even be lowered so far as the rise in national income raises their anticipations.The income-increasing effect of this type of "dishoarding" will therefore be at least as great as that indicated by the ratio 1.75, if the ratio itself is maintained. Only if government securities are purchased *at the expense* of other current outlays on consumption or investment will government deficit spending fail to increase total national income. Such a diversion of spending is unlikely to occur, except under the stimulus of war patriotism. Under present circumstances, it therefore makes little difference whether new government securities are purchased out of previous hoards or out of newly created money, so far as the income-effects are concerned.

[1] Simon Kuznets, *National Income and Capital Formation*, 1919–1935 (1937), p. 53. Kuznets' data here are presented as 3-year moving averages. In order to

then apply to our estimate of the prospective increases in income; subtracting the prospective increases in net new investment as thus computed leaves the prospective actual increases in consumer spending which will be produced by government deficit operations. Comparing these estimates with our previous estimates of how much such consumer spending can be expanded *without* bringing on an inflation will then allow us to make a rough forecast of whether or not inflation will actually set in, and if so, when.

It must be emphasized in advance that the estimates now to be presented are intended only as rough illustrations of the general orders of magnitude of the phenomena under consideration. They make no pretense at being precise forecasts of what will later turn out to be the actual numerical facts. On the other hand, however, it will be seen that even quite large errors in these estimates will not alter the calculated date of the onset of substantial inflation by more than a few months at most.

6

The application of the methods of calculation just described is fairly straightforward. A recent estimate puts total unemployment in January, 1941, at 7 millions (including, presumably, all employable people on WPA and relief). As remarked in Sec. 2, above, it seems likely that a considerable number of these people will never be drawn into private employment at all or into government service. We have previously suggested that as many as 3 millions may prove to fall in this class. To take assumptions as favorable as possible to the postponement of inflation, however, let us suppose that the figure is only 2.5 millions, even after inclusion of the permanent core of "frictional" unemployment. It is likewise necessary to deduct the men who are being or will be drawn into military service through the

underestimate rather than overestimate the prospects for "inflation," I have therefore left off the two terminal years of the expansion period, 1922 and 1929. His data also include "net capital formation" by governments.

draft, calling up Army and Navy reserves and the National Guard, and voluntary enlistment. They may run to 1.5 millions or more in the next year or two. Finally, large additions will be made to the labor forces of the defense industries and the industries that supply them, perhaps 500,000 to a million men or more.[1] On the other side of the computation, however, the natural growth of the population will add over 500,000 a year to the labor force; and perhaps another 2 million to 3 million men and women can be drawn into industry from agriculture and from sub-marginal occupations without materially impairing total production.

These estimates yield a net total, as the maximum possible increase in the labor forces *of the consumers'-goods industries* and of the industries which supply them, of not above 5.5 million men over the next year or two. Since part of the estimate of reported unemployment with which we started represents seasonal unemployment, however, the best figure to use in calculating the possible expansion of annual output is undoubtedly somewhat smaller. We shall assume it to be 5 million men.

How much will the employment of 5 million more men increase the possible money volume of the proceeds from sales of the consumers'-goods industries, in the absence of "inflation"—that is, assuming that the physical output of these industries (adjusted for physical productivity per man[2]) increases in proportion to sales proceeds? In 1940, for the country as a whole, the average money income per person employed was roughly $1,500 a year. This means that the *average* value of the output of finished consumers' goods and services sold and of net additional investment goods sold

[1] Public statements by Washington officials in March, 1941, suggested that as many as 3 million additional men may be required before long in the defense industries. This seems to me excessive, at least with respect to the next year or two, but if correct means that the danger of inflation as appraised below is correspondingly greater.

[2] Since we are here dealing only with dollar totals, we do not need to estimate changes in this physical productivity.

was substantially $1,500 per person.[1] The *marginal* value, however—the increase in physical output and hence in sales proceeds, when employment is increased—is probably substantially higher in most cases where output was previously well below capacity, because of the spreading of overhead costs over a larger output. Suppose the marginal value is not $1,500 but $2,000 a year. Then the employment of 5 million more men will make it possible to increase the sales proceeds of the consumers'-goods industries by 10 billion dollars in 1941, before inflation is encountered. This seems to be the highest figure which can reasonably be arrived at. If only 4 million men prove to be available for employment in the consumers'-goods industries, the figure will be only 8 billion dollars.

Certain qualifications and further comments, however, must also be made. If serious bottlenecks develop in the supply of materials or equipment for the consumers'-goods industries, costs and therefore prices will rise; physical output will fail to expand with sales proceeds; and effective inflation will set in before the 10-billion-dollar limit has been reached. On the other hand, it might appear that any increase in the hours of work in the consumers'-goods industries would increase output proportionately, with no increase in costs or prices per unit. Under our present legislation, however, this is possible only to a limited extent, if at all, simply because all overtime must be paid for at higher rates of wages.[2] Working overtime hours would make costs move up; in the state of market demand and of the relation between actual current output and "capacity" output which working

[1] As previously pointed out, national money income is nearly equivalent to the money value of sales proceeds from the goods referred to (see Appendix IV, below).

[2] This proposition must not be interpreted, however, as an argument for repeal of the legislation. Such repeal would work to the advantage of dividend receivers and of corporation managers (from the spreading of nearly constant overhead costs over a larger volume of output at nearly constant labor costs *per unit* of output) but would penalize labor indefensibly. From the point of view of the national well-being, I doubt if a case can be made for cancellation of any of the important social advances achieved in recent years; and in any event such cancellation is at present politically impossible.

overtime implies, prices would then almost certainly move up too, as a matter of fact if not of financial necessity; and this would cause sales proceeds to rise more rapidly than physical output. The latter phenomena, under our definition, *are* inflation. Finally, in 1942, there will be a further "natural" increase in the employable population, of perhaps 500,000 persons. If all of these go into the consumers'-goods industries—what is, in fact, most unlikely—the further increase in the sales proceeds of these industries, which then becomes possible without inflation is another billion dollars.

Next, how much will the government's deficit-spending program actually increase the national money income? The estimated deficit for fiscal 1940 was 4 billion dollars, for 1941 is 6 billion dollars and for 1942 is 9 billion dollars. On the assumptions stated in the preceding section, and supposing that an initial increase of $1 in the supply of "active" money will increase the national money income by $1.75, the 1941 deficit spending will increase the national money income 10.5 billion dollars, from a probable total of about 74 billion dollars in 1940 to 84.5 billion dollars in 1941. A substantially greater increase will probably appear in 1942, on the present outlook, to 100 billion dollars. It is possible, however, that the income-money coefficient here used, which is the average for 1933–1939, will prove to be too high for 1941–1942. If it drops, from 1.75 to say 1.60, the increase in income in 1941 will be only 9.6 billion dollars and in 1942 only 14.4 billion dollars.[1]

Not all of this increase in income, however, will be spent on consumers' goods and services. Using the 1923–1928 average

[1] No specific account is taken here of the actual lag of changes in income behind changes in money stock (a lag that now averages some 5 to 6 months, or a fraction of 1 year measured by $1/v'$). It is more than allowed for by the fact that the deficit-spending figures are for fiscal years ending June 30, whereas the income figures are for calendar years.

Since these figures all run in terms of total money volumes, it is also unnecessary to take account of possible changes in wage rates, hours of work or the like, in the defense industries themselves. Such changes will affect the number of units of armament obtained per dollar spent, but not the *total* money incomes produced by such spending.

(explained in the preceding section), only some 88.2 per cent will be thus spent. In dollar terms, this amounts to some 9.3 and 13.9 billion dollars a year in 1941 and 1942, respectively, on the first basis of estimate; and to only 8.5 and 12.7 billion dollars, respectively, on the second.

It should be stressed that in reaching these figures, the income-increasing effect of the deficit of one year is treated as *added to* the income-effect of the deficit of the preceding year. This is tantamount, of course, to assuming that the general level of anticipations will remain substantially constant or even rise. If it falls, however, our estimates will prove to be correspondingly too high. Some students have supposed that a deficit can increase total income only so far as the deficit *exceeds* the deficit of the preceding year. As pointed out elsewhere, the assumption which this involves —the assumption that anticipations will fall indefinitely and rather rapidly, and that the *relative* size of money hoards will hence rise indefinitely—seems untenable except over limited periods.[1]

We can now put these two sets of estimates together. It is immediately obvious that on these estimates, we shall have a potentially inflationary situation before the end of 1941. Our probable expenditures on consumers' goods and services will increase by from 8.5 to 9.3 billion dollars in 1941, whereas the increase which is possible in that year without incurring inflation is only 10 billion dollars. Even adding another million men to our estimate of the possible increase in employment in the consumers'-goods industries will not raise the limit more than another 2 billion dollars, and hence will not defer the appearance of potentially inflationary conditions beyond the first two or three months of 1942.

Thereafter any further deficit spending will work to produce inflation itself, with its familiar spiral of rising prices, rising money incomes, falling standards of living for the fixed-income groups and rising costs of defense per unit of armament. By the latter part of 1942, if deficit spending

[1] Compare Chaps. X, Sec. 5, and XII, Sec. 3.

is continued at merely the rate now planned, if nothing is done to prevent inflation, and even if there is no dishoarding movement and no shortage of materials, the rate of rise in consumers'-goods prices will be on the order of at least 15 per cent a year.

But these estimates are almost certainly too optimistic, unless a true world peace is somehow created or unless effective controls are instituted. In the first place, deficit spending is likely to go forward at a more rapid rather than a less rapid rate, particularly if we enter the war. In the second place, prices do not remain constant until full employment is reached and then rise proportionately with any further increases in the money volume of spending. They begin to move upward much sooner. In the third place, shortages of materials and equipment are almost certain to develop in the consumers'-goods industries, as the defense program gets under way. Finally, a wave of money "dishoarding" may easily get started, and indeed is almost certain to appear if consumers'-goods prices begin to rise on any wide front. On the estimates made in Chap. IX, above,[1] the total volume of money hoards in 1939 was not less than 13.4 billion dollars, and the increase over 1929 was nearly 9 billion dollars. All the available evidence indicates that hoards are still larger now. The spending of any substantial part of these hoards within a period of a few weeks or even months, whether on new commodities and services or on securities and other previously existing assets, would accelerate the onset of inflation on any definition of the term, and would be likely to start a first-class inflationary panic. Even if such a dishoarding panic does not actually develop, the other three factors listed are likely to bring on a sharp rise in consumers'-goods prices well before the end of 1941, if nothing is done to prevent it. The latter part of 1941, rather than the end of 1942, may easily see a rise of 15 per cent or more in the general average of such prices.

[1] Also see Appendix II.

The views just expressed, as to the imminence and the probable severity of inflation, are markedly at variance with those which many other students have recently offered. I think, however, that these other students have been rather seriously misled by the fact that this country still has (in the early spring of 1941) severe unemployment, large surpluses of certain foods and materials, and large excess capacities in certain industries. The surpluses of goods and capacity are genuine enough. But in many other lines, which in the aggregate are of at least equal importance, we are at or close to actual shortages. All these particular surpluses mean is that the initial speed and especially the specific areas of inflation will not be wholly analogous to those of 1917–1920. The unemployment is also genuine enough, but the extent to which it will be absorbed by an expansion of output *in the consumers'-goods industries*, and thus forestall inflation as we have defined it here, is far more limited than seems to be generally realized. A large fraction of those who are unemployed now will necessarily be drawn before long into the defense industries or the armed forces. For this reason it will be utterly impossible for the physical output of consumers' goods to increase, over the next year or two, anything like in proportion to the probable increases in *total* employment or in total national money income. Unless something is done to prevent it, a point must therefore be reached fairly soon at which sharp increases in the average price of consumers' goods will become inevitable.

Finally, anyone who will look around him will see that in many directions consumers'-goods prices have *already* begun to rise substantially, and quite without any such justification as a diversion of the labor or materials required to defense industries or a great realized increase in consumer or in export demands. For a variety of reasons the early stages of inflation, insidious and barely perceived but ominous, are already upon us.

7

The conclusions just reached depend on the assumption (among others) that the money volume of individual spending on consumers' goods will increase roughly in proportion to the money stock and to individual money incomes, and in substantially the ratio characteristic of 1933–1939. If so, then on an average of the preceding estimates we shall have inflation by or before the end of 1941. This assumption, however, may prove to be erroneous in either direction. If a wave of dishoarding gets under way, inflation will set in still earlier. If something is done to check increases in the prices of consumers' goods, on the other hand, the date will be postponed; and conceivably, if the pressure of deficit spending does not become too severe, any substantial measure of inflation itself may be avoided. Can this latter result actually be achieved or even be approximated?

The problem of preventing sharp increases in consumers'-goods prices—effectively, of preventing inflation—presents two different aspects, because two different sets of forces are at work to force consumers' prices up. One is the expansion of consumer outlays produced by the great increases in individual money incomes which defense spending has already brought about, and the further great expansion likely to ensue in the near future. This expansion is what we have been talking about in the preceding section. The other is the inevitable tendency of manufacturers and dealers to impose increases in prices, restrictions on output and quality deteriorations *in anticipation* either of these very increases in consumer spending or of increases in costs. In part, such action is a "legitimate" attempt to forestall the effects on business sales and income of expected shortages and price increases in labor and raw materials; in part, it is a sheer speculative exploitation of quasi-monopolistic positions. This development has already begun on a substantial scale (March, 1941). Price increases of this latter sort must

be restricted in every way possible. They both reduce standards of living, to the benefit of private business but not to the benefit of the government or the country at large, and intensify the development of an inflationary spiral of price-wage-price increases.

It is by no means clear that control measures adequate to counteract both of the forces just described can be devised and executed. The measures adopted must evidently be of two different sorts. One group must be aimed at the manufacturers and dealers in consumers' goods, and should be initiated at once. The second group must be aimed at increases in the money volume of consumer spending, but clearly should not be inaugurated until the practically attainable maximum volume of employment is already fairly close at hand. Otherwise the measures will merely penalize consumers, especially those in the low-income brackets, to the benefit of business profits.

To deter the price-raising and output-restricting operations of manufacturers and dealers, so far as these operations exceed what is justified by actual shortages and actual cost changes, only two measures seem likely to be of much value. One is the further large increases in the excess-profits tax proposed in Sec. 4 above. This tax will work to redress the distribution of income over time, it is true. When viewed as a device for controlling inflation, however, it has the grave drawback that it is likely to shut the barn door only after the horse has escaped. A partial remedy for this latter defect, though one which in turn presents serious administrative problems, is to make the tax payable quarterly or even monthly. The other measure is the imposition of compulsory price controls, and even priority and other rationing schemes, in the consumers'-goods field. This step will require a distastefully large degree of intervention by the government in almost every aspect of our business life, and may prove politically inexpedient except in a war emergency. It seems to offer the only sure way, however, of breaking

up the quasi-monopolistic and exploitative tactics in which many firms are already engaging, and hence of controlling this segment of the powerful forces now working toward serious inflation. It is a step which should be begun immediately.

A second group of measures should be aimed at restricting increases in the money volume of consumer spending. Some of these measures can be taken at once. First, a certain degree of restriction will result from the decreases in individual income tax exemptions, and the increases in rates in the lower and middle brackets, which were proposed above for other reasons. Second, the *voluntary* adoption of some form of the proposal J. M. Keynes has recently advanced is desirable. This is a scheme to pay part of all individual money incomes received directly or indirectly from government spending in the form of interest-bearing securities or savings accounts, which will not be convertible into cash until some time after the present defense emergency is passed. The scheme will check increases in current consumer spending, and will also provide a backlog of such spending which can be released to help offset the expected post-defense slump. The defects of the scheme are that the number of people who will accept it voluntarily and the extent to which they do so are likely to be limited; and that if made compulsory, it would work obvious injustice in terms of *current* living standards against those who receive incomes from government orders when people who receive incomes from purely private activities are not similarly restricted.

No further steps should be taken, however, until employment in the consumers'-goods industries is approaching what is judged to be the currently attainable maximum permitted by the size of the available labor force. *This cannot be emphasized too strongly.* To impose compulsory controls on consumer spending before this point is reached, and in a period when consumers'-goods prices are almost

certain to rise somewhat under the best of circumstances,[1] would mean an unjustifiable cut in the standards of living of the lower and middle income groups.

When employment in the consumers'-goods industries is approaching the currently attainable maximum, on the other hand, the situation is different. Here any further increases in the current money volume of consumer spending cannot evoke much further increase in physical output, and can only force a rise in prices. This is true even if manufacturers and dealers impose the most rigorous self-denying ordinances on themselves, and even if price controls are in operation. Price controls cannot be more than partially effective in these circumstances, for if the pressure toward higher prices comes from exuberant competitive bidding rather than from the quasi-monopolistic practices of suppliers, large-scale evasion is inevitable. Further increases in spending itself, therefore, must be checked.

A number of measures to accomplish this end have been proposed. One is increases in Social Security pay-roll taxes. Such increases, however, despite the increases in eventual Social Security benefits which would accompany them, would be certain to encounter strong opposition in a period when the realized cash incomes of many corporations and wealthy individuals seem to be rising rapidly. The taxes would strike only those people who are in the lower income brackets, and even within this group would leave untouched many millions who are not under the Social Security provisions. The same objections apply even more forcibly to pay-roll taxes of other sorts, since these presumably carry no increases in future benefits. All such pay-roll taxes would also be likely to create demands for offsetting increases in wages.

A second is a general manufacturers' sales tax. This proposal has the fatal drawback in the present circum-

[1] For example, in consequence of shortages in various materials, or in consequence of the decline in average efficiency of workers and the resulting increases in costs which commonly appear as plants approach "capacity" operation.

stances, however, that the tax would inevitably be pyramided, and would thus both raise prices more than proportionately and also shift the distribution of income in favor of business income and to the disadvantage of consumers.

A third proposal, and one especially popular with business men, is the prevention of further increases in wage rates. This step seems indefensible in the present general situation, for if prices rise at all after the freezing labor will again be penalized to the benefit of profit-receivers. At the same time, however, it is only fair to point out that demands for higher wages, based on the quasi-monopoly strength of labor organizations when the country is in the neighborhood of full employment, cannot be conceded indefinitely. Such concessions, by raising costs of production, will inevitably start an inflationary spiral of price-wage-price increases, and thus defeat themselves. It may become necessary, therefore, to parallel price controls with detailed wage controls, the latter being oriented both on current living costs and possibly on the net profits after taxes of the specific firms concerned. Such wage controls are repellent in a democracy, but may become the only alternative to a devastating inflation from which labor itself would be one of the worst sufferers.

Finally, and only as an inflation-emergency measure, a general retail sales tax can be imposed. This device seems to me, on the whole, to have the greatest chance of success in restraining increases in consumer spending after attainable full employment is being approximated. *It should not be imposed, however, until this point of attainable full employment is virtually at hand.* Moreover, the tax which is appropriate here should be of a particular and somewhat novel type. The minimum necessities of life of the low-income classes should be exempted entirely (as by exempting specified grades of foods and clothing, rents below certain levels, and the like). Other quasi-necessities should be taxed at low rates; luxuries and semi-luxuries at high rates.[1]

[1] Substantial increases in the present excise taxes, which would be too limited in

Transactions in previously issued securities and land, and speculative transactions in staple commodities (for example, ones conducted by people not themselves producers or dealers, or by the latter groups in excess of say 3 months' average requirements), should be included and should be taxed at high rates. The administrative authorities should be given a considerable degree of discretion in setting up these rate differentials. In addition, the authorities should have power to determine the date when the tax comes into force, to vary its rates according to the severity of the inflationary situation, and to reduce the rates to zero when the inflation emergency is passed. To permit the necessary machinery to be set up in advance of the actual emergency, which may develop extremely rapidly, the legislation required should be enacted at once.

Such a tax is clearly not defensible as a permanent policy, because even with the proposed exemptions and differentials it will strike relatively harder on the lower income groups than on the high. In an inflation emergency, however, it has certain great merits. It will place a severe penalty on commodity hoarding and speculation; it will check consumer spending without raising prices in proportion to the tax itself (some of the burden will be forced back on producers and dealers); and to the extent that it furnishes revenues to the government it will reduce the government's current deficits, and will hence diminish that expansion-pressure of deficit spending on current income which lies at the heart of the present danger of inflation. The absorption of so many men in the defense industries and the armed forces is placing a strait-jacket on the consumption-goods industries, and will prevent a good deal of that expansion in their output which the increase in money demands for their products would otherwise evoke. The proposed limited sales tax will establish a partial offset to the price-raising effects of this

effect to be of much value in the present connection if they were the only step taken, should also either be included here or be imposed independently. The range of excise taxation should likewise be extended.

enforced restriction on the expansion of consumers'-goods output.

Against the tax it can be argued that its imposition will produce demands for offsetting wage increases, and that this will again start the price-wage-price spiral. That contention would be entirely correct with respect to a tax which hits *all* retail sales, and at substantially uniform rates. The tax here proposed will not strike the minimal necessities of life at all, however, and therefore will not provide a legitimate reason for enforcing wage increases. It is not easy to base a serious demand for higher wages on the increased price of silk shirts. The tax will admittedly affect the distribution of income adversely to some extent, as long as it is in operation, for it will impose a somewhat greater relative burden on the lower and middle income groups. This is not a serious price to pay, however, for the avoidance of serious inflation. The potential losses avoided will far exceed the actual losses incurred.

One other aspect of the inflation problem as a whole should be pointed out. The only type of inflation with which we have thus far been concerned is the relatively gradual, "creeping" type produced by progressively larger but still moderate government deficit spending. A far more violent explosion is also well within the bounds of possibility, as already pointed out, in consequence of a rapid and even panicky spending on goods, services and securities of the very large volume of money hoards now in existence.[1] Such a panic, if it develops, must be stopped at all costs and be stopped quickly. In the present banking and general financial situation of the country, the only quick corrective is to enforce a large increase in bank reserve requirements, and thus to compel a rapid liquidation of security holdings and "long" commodity positions. Violent though the shock, it would be of short duration, and would not be too high a price to pay for arresting an inflationary bonfire. The require-

[1] The effects would also be intensified if there were any extensive conversion of time deposits into demand deposits or currency.

ments should be lowered again as soon as the situation is under control; and the Federal Reserve Banks should also act to prevent any collapse in government security prices. Member-bank reserve requirements, however, are already close to the present legal maxima. To provide a defense against this possible emergency need, therefore, legislation should be enacted promptly to raise the maximum requirements, at the discretion of the Federal Reserve authorities, to at least twice the present limits; and also to enforce corresponding increases in requirements on *all* commercial banks, whether members or not.[1]

8

It is impossible at present to guess whether or not the United States will actually enter one or more of the wars now raging in the world, or even if the European war will soon cease. At the time this is written, continuation of the European war and our entry into it both look increasingly probable. If we do go in, the whole scale of our military expenditure will rise to still more gigantic heights. Eventually, however, whether in 2 years or in 5, we must hope that the world will return to an era of greater sanity. After the long-drawn-out crisis of rearmament and perhaps of war is over, what will happen to our economy?

One thing seems fairly certain. Unless the wars now going on continue for a number of years more, the cessation of defense spending by the government or merely any sharp reduction in its volume must precipitate a violent business slump in this country. Indeed, even a sharp reduction in the *rate of increase* of defense spending is likely to bring on a recession, because of its effects upon the anticipations of business men and of individual investors. They will almost certainly regard such a reduction in the rate of increase as the beginning of the end of a program which, in any event, cannot continue to expand forever. After the first World War,

[1] As requested by the Federal Reserve authorities themselves on Jan. 1, 1941. Constitutional difficulties over states' rights might be evaded by resort to a Presidential emergency proclamation.

the onset of serious business depression was postponed a year and a half by the tremendous accumulation of deferred private demands for peacetime products, both here and in Europe. No such starving of private demands is now in sight in this country, however, and none is likely unless we go to war on a major scale and for a protracted period.

If such a slump is threatened by the approaching end of defense spending, we shall once more face the problem of severe unemployment. It is possible, of course, that purely private investment stimulated by the anticipation of profit from purely private production and sale will expand rapidly enough to absorb all or most of this unemployment fairly quickly, and to leave us with only a rather brief though sharp unemployment crisis. If this revival of purely private investment does not take place, however, there is no solution except the resumption of government spending on a sufficient scale to absorb the bulk of the unemployment itself.[1] The argument in defense of this position has been presented at length in Chaps. XII and XIII, above, and need not be repeated. It should be emphasized that we are under no legal and no superhuman compulsion, of course, to follow this policy. If we do not, however, then we must face all the disastrous social, political and medical consequences of large and protracted unemployment. The price we will have to pay to avoid these consequences, on the other hand, is merely the price of letting the government do for us what we will not do for ourselves—namely, consuming or investing all or most of our current incomes, instead of hoarding any substantial part of them. This "price" is a small one compared to the price we should pay for large-scale unemployment.

As just remarked, it is entirely possible that private investment will revive, after the war pressures are over, on a scale

[1] This need not entail government *deficit* spending, if tax revenues are large enough. A tax on hoards that absorbed all increases in such hoards, as remarked in earlier chapters, would exactly suffice to absorb any unemployment in private industry without the necessity of deficit financing.

sufficient to prevent any serious unemployment at all. Reasons for taking a somewhat pessimistic view of the prospects in this direction, however, were suggested in the two preceding chapters. Within the period of the business cycle, rather wide fluctuations in private activity and hence in private employment seem to be almost unavoidable; and for any one cycle as a whole, the *average* volume of unemployment in private industry will therefore remain substantial. Over longer periods, no protracted upsurge in the volume of private investment in response to wide technical advances is now in sight; both prospective tax burdens and the prospective continuation of government policies which are, in considerable part, interpreted as "unfavorable" to business are likely to make prospective investors chronically pessimistic about the chances for any unusually large net profits; and there is little in the present outlook abroad, no matter who wins the wars now raging, that can justify hopes for any large and protracted expansion either of our foreign trade or of our foreign investments in the near future.

These propositions do not mean that the volume of net new private investment will not continue to be substantial or that it will not continue to increase. Nor do they mean that our general standards of living will fall or even cease rising over, say, the average of the next decade. Because of the effects of an extremely complex and variegated set of circumstances, however, the very rapid general economic expansion which characterized the decades before 1929 seems unlikely to be resumed at the same high rate, at least within the next few years. Put more technically, the level of the private marginal propensity to hoard—a level which is here both a cause and an effect—is likely to remain fairly high.[1] If this proves to be the case, then not all of any increases in money incomes will be spent either on consumption or on new investment, and the *average* volume of unemployment in private enterprise will therefore remain

[1] As evidenced by the persistently low marginal ratio, in recent years, between increases in income and increases in money stock.

substantial. Government spending to absorb such unemployment will hence continue to be necessary, and in fairly large average amounts.

Such government spending is not, however, a sign either of national economic degeneration or of the disappearance of "rugged individualism." It is simply an evidence of the fact that we know more than we used to know about how our economic society works, and that both on humane grounds and in response to the dictates of our own self-interest, we are becoming more intelligent and more effective than before in devising means to combat those undesirable and often intolerable economic conditions which our own actions create.

Appendix I

A NOTE ON CERTAIN OTHER BUSINESS-CYCLE THEORIES[1]

I

THE hypothesis presented in Chaps. VII and VIII above to account for self-generating business cycles clearly resembles in various respects the body of ideas advanced by Prof. Wesley C. Mitchell in his original volume on *Business Cycles* (1913), though it starts from a quite different base. Without attempting a detailed comparison, three differences may be pointed out. First, I think it is fair to say that in Professor Mitchell's account, the prime mover in the business-cycle process was made to be the pursuit of business profits in a rather narrow sense of that term. In the present study, however, "anticipations" are taken to relate to every aspect of economic activity, so far as this activity is affected by individual or group judgments about the future. The motives and operations of the small individual hoarder of cash, whether pursuing private gain or attempting to avoid private loss, are as much a part of our picture as are those of the large corporation. Second, the present study endeavors to go substantially farther in explaining the logical bases of the several relations postulated. This is particularly true of our attempt to account for changes in the general level of anticipations itself, in terms of previous changes in income. Third, although cyclical changes in production costs are a major observable phenomenon of business cycles, these cyclical cost changes do not "explain" business cycles themselves. Cycles in general business activity could conceivably appear even with production costs constant. What we have tried to do is hence to show not only why expansion ceases but also why a more or less severe downturn then sets in, and conversely: that is, why there *are* business cycles. Finally, the present study also endeavors to put its theoretical conclusions into a comprehensive and logically consistent form which is capable both of fairly compact mathematical expression and, it may be hoped, of eventual statistical substitution. This Professor Mitchell refrained from attempting, as was entirely appropriate in the kind of study he was then making.

[1] The present volume was written, in largest part, in or before the summer of 1939. The paucity of references here and in earlier pages to the literature which has appeared since then is explained and, I hope, excused by that fact.

2

The present hypothesis rests on an interpretation of the inherent character of the business cycle, on the other hand, quite unlike that underlying the Wicksellian cumulative process. The more important differences are self-evident and occur at a great many points. The only major similarity is the reliance of both hypotheses on the prospect for private gain or loss as the motivating agent in cyclical fluctuations.

3

No useful purpose would be served here by attempting an examination of the bulk of the more recent literature on business-cycle theory. Professor Haberler's recent volume, *Prosperity and Depression* (1937; 2d ed., 1939), presents excellent accounts, and the interested student can easily establish the principal points of agreement and conflict. I should like to comment briefly, however, on four studies which have appeared since Professor Haberler's book was first published.

One is by M. Kalecki, originally published as an article in 1937[1] and now reprinted, with alterations and extensions, in his *Essays in the Theory of Economic Fluctuations* (1939). The hypothesis presented in the article turns on (1) the lag between investment decisions and their execution, (2) the difference between the expected and the actual profit rate and (3) the relation between actual gross new investment and the amount of investment currently "needed," as repairs and replacements, to maintain existing physical capital. In the book (Chap. 6), the chief stress is placed on this last point, and it is argued that the volume of new investment activity "which just covers wear and tear . . . corresponds to a long-run equilibrium" (p. 147). The fluctuations of actual investment activity around this "necessary" replacement volume are, in effect, the business cycle.

I agree that the lags mentioned play a part in cyclical processes, but the lag of anticipations behind income changes seems to me of far greater importance in explaining these processes. I have also tried to show that actual rates of *current* profit, or yield, are usually unimportant in the making of investment decisions (Chap. V, above; and see a footnote in Chap. VIII, Sec. 3). In addition, the quantity of new investment which is "needed" to cover wear and tear is surely of only secondary importance as a factor governing the volume of current new investment. What is of primary importance is the levels of anticipations of investors and capital users (who may be the same person or group). If they do not think that the return on the contemplated investment in repairs and replacements will at least equal the marginal yields they expect from other possible

[1] *Review of Economic Studies*, February, 1937.

undertakings, the investment will not be made, regardless of the physical deterioration of the plant. Nor can this replacement volume of investment be a long-run equilibrium volume, since whenever actual investment exceeds or falls below that volume, the "necessary" replacement volume is itself altered. Kalecki hence fails to explain satisfactorily the source of changes in the general level of anticipations, changes which, I think, can be accounted for only by the hypothesis already outlined. This defect appears clearly in his explanation of the cessation of expansion and the beginning of recession (pp. 146–147). He shows the dependence of changes in income on changes in investment volume and of these on changes in anticipations, but does not give the vital final link necessary to an account of the self-generating cyclical process—namely, the dependence of changes in anticipations, in turn, on changes in the rate of change of income itself.

4

The second study is Prof. J. R. Hicks's admirable *Value and Capital* (1939), which has been referred to at various points above. In this book, the formal discussion of business cycles is confined to a short final chapter, but a large part of the book is concerned with what can actually be regarded as business-cycle problems. The whole method of attack of the book, which accounts for present phenomena primarily in terms of what people expect in the future, is one with which I am warmly sympathetic, and I think that the present study is at least broadly consistent with Hicks's main position. But Professor Hicks does not go far toward explaining whence changes in anticipations come. This is the task to which, so far as concerns the phenomena of the business cycle, the present volume has been largely addressed. Moreover, his specific discussion of business cycles themselves is so brief and so general that it is not easy to say much about it. The recovery phase of the cycle and, by implication, the existence of the whole cycle itself are explained primarily in terms of irregularities in the supply of inventions and innovations in the broad sense (*e.g.*, pp. 299–300). If such irregularities are regarded as the theoretically necessary and sole condition for the appearance of business cycles, I should be compelled to differ. I think that cycles would appear even with a supply of inventions which in the objective sense was absolutely unchanged, and would appear in consequence of precisely those changes in anticipations which have already been so much discussed above. But I quite agree that in terms of historical developments, the irregularities of supply that have actually appeared have greatly affected the objective form that the several cycles have actually taken.

I am also rather doubtful about the "stabilizers" (Chap. XXI). They do not seem to me very important or likely to be very efficacious in preventing wide fluctuations. Witness the experience of the United States in

the middle and late 1920's, when commodity prices and wage rates were probably as near to stability as they are ever likely to be in the actual world. A better "stabilizer" is provided, I suspect, by the fact that *time* is required for many of the more important proposed changes in economic activity to be worked out (see Chap. VII, Sec. 6, above). In these intervals, other and different sets of anticipations often develop, and opposed sets of changes are put in process. Nor does Hicks's condition of stability for the aggregate system—that the elasticity of price expectations be equal to 1—seem to me adequate (pp. 254–257; also see pp. 197 *ff.*). Unless the changes in prices are inversely proportional to changes in quantities, income must vary if prices vary; anticipations will hence vary too; and the system will be unstable. The most defensible stability condition is probably that income be constant or, better, that it change at a constant (positive) rate.

Finally, Hicks has done a great service to other students by his penetrating discussion of the Austrian capital theory, a discussion which greatly clarifies the production-period controversy,[1] and by his re-examination of the savings-investment problem.

5

The third study is Professor Schumpeter's *Business Cycles* (1939), 2 vols. This book is the leading current exposition of the "exogenous-disturbance" explanation of business cycles. It presents so tremendous an array of historical and theoretical material that no brief discussion can possibly do it justice, and only a few comments will be attempted here.[2]

The outstanding merits of the book, it seems to me, are that it takes a unified view of the economic system and hence presents the theory of business cycles as an integral part of the general theory of economic activity as a whole, and that it attempts to follow the "scientific" procedure of first setting up a structure of hypotheses which seem reasonable on a priori theoretical grounds and then trying to test this structure against various types of data supplied by observation. The first five chapters are a masterpiece of speculative reasoning, in which a pattern of three different and superimposed types of cycles is worked out and is made to explain, in a priori terms, the total phenomenon of fluctuations in general economic activity through time.

There are also serious defects, however. First, as is familiar, business cycles are regarded as being, in essence, the consequence of the adjustment of the economy to successive waves of "innovations." But the concept of

[1] But see the different view expressed by Dr. Fellner and Professor Ellis in the *Journal of Political Economy*, August, 1940.

[2] Also see the review article by Simon Kuznets, *American Economic Review*, June, 1940.

"innovations" turns out to be so fuzzy that its statistical and historical usefulness is uncertain. No unequivocal objective test or definition of an "innovation" is given. Not *all* "exogenous" disturbances and not even all advances or changes in techniques are cycle-starting "innovations." An exogenous disturbance is an "innovation" only so far as it does start business cycles. This is dangerously close to question begging. Second, no explanation is given of why a depression equilibrium following the adjustment to one wave of innovations should be followed by, or should give rise to, another wave—that is, to speak loosely, of why innovations are innovated. In other words, if business cycles are regarded as self-generating (the view adopted in the present study), no explanation of the process of self-generation is given; whereas if they are regarded as the result of a series of innovations which act as cycle starters, no explanation of the appearance of these cycle starters themselves is given. If their appearance is a matter of sheer accident, then the very regularity of period of the cycles which is postulated, and especially of the Kitchin and the Kondratieff or long cycles of which Schumpeter makes so much, is left wholly unexplained; and this too is puzzling.

Third, I think it follows from the first two points that this use of the concept of innovations really amounts to little more than saying, with respect to the past, that there *was* a series of economic "changes"—of applications of new techniques of production, resulting changes in business leadership and the like—and that cyclical fluctuations in general economic activity accompanied or were a part of these changes. So far as Schumpeter's evidence and even his positive argument are concerned, many of the "causal" relations may have been just the opposite of those he postulates. That is, it can be contended that inventions and the like were applied, and even the forms of organization and leadership of business activity were altered—that is, "innovations" appeared—*because* general activity was increasing or was expected to increase. This latter argument then throws us back, for an explanation of the increase in activity itself, on the self-generating hypothesis we have presented in previous chapters or on some analogue.[1]

Fourth, the attempt to use a single general explanation for three types of fluctuation as completely different in period and other objective characteristics as the so-called Kitchin, Juglar and Kondratieff cycles is prima facie open to question. Fifth, a smaller point, the evidence for the existence of both the Kitchin and especially the Kondratieff cycles is at least arguable; the latter seem unequivocal only in price series. Finally, I think one is entitled to feel a little uneasy at times over Professor Schumpeter's use of his vast array of historical and statistical material.

[1] Also, on the argument of Chaps. VII and VIII above, business cycles would appear even if techniques (however broadly construed) remained unchanged.

For the period with which I am most familiar, for example, since 1919, the presentation and analysis do not seem wholly acceptable, and especially the explanation of the 1929–1930 peak and downturn. Considerations of space, however, prevent any attempt at a detailed discussion.

6

The last of the four recent studies is Professor Tinbergen's *Statistical Testing of Business-cycle Theories* (1939), 2 vols. Of its two parts, the first is an outline of Tinbergen's general method and its application to investment activity in various countries. The second is a study of cycles in the United States in 1919–1932.

Tinbergen's general method is easy to grasp in broad outline but complex and extremely laborious in detail. He begins by setting up rather simple hypotheses, usually drawn from familiar propositions of general economic theory, as to the "explanation" of the movements of various important economic variables considered separately. These variables, which include such things as income, investment, money and profits, cover nearly the whole area of business activity. Simple additive equations are set up to express these hypotheses, with unknown coefficients and time lags. Then the equations are applied to an array of relevant statistical data, and multiple-correlation procedures are used to determine the actual coefficients and lags by a trial-and-error process; in consequence, certain variables are dropped, and others added. Next, the important variables which served as "explaining" factors in this first wave of attack are themselves similarly analyzed and "explained." The result is not a confusing and indefinite multiplication of variables and equations, however, as might have been expected, but a rather startling series of simplifications. Finally, a synthesis of the equations is effected. Tinbergen, like most students, makes a sharp distinction between "disturbances" and "internal forces" (our "exogenous" and "endogenous" factors). The internal forces are connected with previous business-cycle situations and lead to further self-generating cycles; the synthesis is therefore chiefly concerned with these internal forces. The end result of the analysis of Vol. II is an "explanation" of cyclical fluctuations in American corporate profits, which are taken as a measure or at least an index of the movements of business cycles, in terms of profits themselves over the preceding 4 years, plus the net effect of certain "exogenous" factors.

Tinbergen's procedures necessarily have certain weaknesses and defects. First, he uses annual data almost exclusively. This was made virtually inevitable by the mechanical difficulties of handling multiple correlations for more frequent data in exploratory studies, but an obvious loss of sensitivity in the data, a danger of shifting turning points and a genuine problem over the reality of computed lags of fractions of a year all result.

Second, single series are often used to represent broad categories (*e.g.*, in Vol. I, pig iron to represent all investment); and although this is again perhaps inevitable in exploratory studies, it may also be seriously misleading. Third, the residuals between the "explained" and the sum of the "explaining" series are treated rather cavalierly. They are sometimes quite large and systematic, and suggest important omissions. Fourth, it can be argued and is probably true that these and other easily accessible data could be combined in other systems of equations that would be resolvable into any one of a number of other "key" variables, with as good or even better fits and with quite different implications as to the "explanation" of business-cycle movements themselves. The statistical equations actually presented, on this view, hence do not "explain" business cycles, but only show the slopes of the multiple-regression relations between those variables which chance to have been selected for representation in the equations. The criticism is correct, of course, but it is equally valid for any statistical presentation. Statistical data can show that particular hypotheses are inconsistent with the data or with one another but cannot establish the hypotheses themselves. In fairness to Tinbergen, it should also be pointed out that he really makes no attempt here, as I interpret his work, to formulate a synthetic "explanation" of business cycles as a whole. He does set up simplified self-generating cyclical models, but these, I take it, are intended to be experimental suggestions rather than the "final" answer. So especially for the equation which treats corporate profits as the measure or index of business cycles as a whole and which makes their changes primarily a function of corporate profits in earlier years.

Despite these weaknesses and this lack of conclusiveness, and regardless of the merits or defects of particular findings in detail, I think the book is an important and daring contribution, and likely to prove a milestone in the history of economic analysis. It is the first attempt to apply the long familiar techniques of multiple correlation on so broad a front. It is also the first attempt, even in preliminary form, to make an integrated mathematical picture of the cyclical fluctuations of the entire economy, with all the coefficients substituted from actual observational data and with at least theoretical forecasting value (since the principal "explained" variables are made to depend largely on earlier values of the same or other variables). Both the application of the method and many of the results are illuminating and fresh. I cannot agree with the over-all adverse judgments expressed by Keynes in his review of the book (*Economic Journal*, December, 1939).

The book did not reach my hands till after the present study was virtually completed. I have no feeling, however, that the present study is seriously inconsistent with Tinbergen's results, as far as they go, or with

his general point of view. In the hypothesis outlined in the preceding chapters, it is anticipations and investment which occupy the central position; in his, it is profits. Clearly the two positions are not far apart, though ours can claim to be more comprehensive. Tinbergen's principal "explaining" factor, however, is previous profits. This seems to me again less comprehensive, and in other ways less satisfactory, than what we have used—previous income. Tinbergen, on the other hand, deals explicitly with the "exogenous" factors and includes them in his equations, whereas we have had to be content, in the main, to hold them in the background as part of the given conditions. In this respect, his treatment is the more realistic one.

Appendix II

National Income, the Circular Velocity of Money and Money Hoards: Annually, 1899–1939

Year	National Income	Circulating Money	v' (1 ÷ 2)	v (Assumed; Average Minimum $h = 0.10$)	h (Computed from 3 and 4)	Hoards (2 × 5)	"Active" Money (2 − 6)	v (Assumed; Average Minimum $h = 0.15$)	h (Computed from 3 and 8)	Hoards (2 × 9)	"Active" Money (2 − 10)
	1	2	3	4	5	6	7	8	9	10	11
1899	16.04	5.12	3.13	3.60	0.13	0.67	4.45	3.80	0.18	0.90	4.22
1900	16.87	5.61	3.01	3.60	0.16	0.92	4.69	3.80	0.21	1.17	4.44
1901	17.93	6.42	2.79	3.60	0.22	1.44	4.98	3.80	0.27	1.71	4.71
1902	19.25	6.89	2.79	3.60	0.22	1.54	5.35	3.80	0.26	1.83	5.06
1903	20.46	7.20	2.84	3.60	0.21	1.52	5.68	3.80	0.25	1.78	5.42
1904	20.97	7.49	2.80	3.60	0.22	1.67	5.82	3.80	0.26	1.96	5.53
1905	22.37	8.23	2.72	3.60	0.25	2.02	6.21	3.80	0.28	2.34	5.89
1906	24.19	8.67	2.79	3.60	0.23	1.95	6.72	3.80	0.27	2.31	6.36
1907	25.47	8.95	2.85	3.60	0.21	1.87	7.08	3.80	0.25	2.25	6.70
1908	24.49	8.32	2.94	3.60	0.18	1.52	6.80	3.80	0.23	1.88	6.44
1909	27.62	8.53	3.24	3.60	0.10	0.88	7.65	3.80	0.15	1.26	7.27
1910	29.41	9.39	3.13	3.60	0.13	1.22	8.17	3.80	0.18	1.65	7.74
1911	29.34	9.85	2.98	3.60	0.17	1.70	8.15	3.80	0.22	2.13	7.72
1912	30.71	9.92	3.10	3.60	0.14	1.38	8.54	3.80	0.18	1.83	8.09
1913	32.83	9.79	3.35	3.60	0.07	0.67	9.12	3.80	0.12	1.15	8.64
1914	32.58	11.18	2.91	3.60	0.19	2.14	9.04	3.80	0.23	2.62	8.56
1915	33.96	11.13	3.05	3.60	0.15	1.70	9.43	3.80	0.20	2.19	8.94
1916	40.44	13.95	2.90	3.60	0.19	2.71	11.24	3.80	0.24	3.30	10.65
1917	48.42	15.59	3.11	3.60	0.14	2.14	13.45	3.80	0.18	2.85	12.74
1918	59.47	18.64	3.19	3.60	0.11	2.12	16.52	3.80	0.16	2.99	15.65
1919	65.72	21.58	3.05	3.60	0.15	3.33	18.25	3.80	0.20	4.29	17.29
1920	71.44	23.05	3.10	3.60	0.14	3.20	19.85	3.80	0.18	4.25	18.80

NATIONAL INCOME, THE CIRCULAR VELOCITY OF MONEY AND MONEY HOARDS: ANNUALLY, 1899–1939.—(*Continued*)

Year	National Income	Circulating Money	v' (1 ÷ 2)	v (Assumed; Average Minimum $h = 0.10$)	h (Computed from 3 and 4)	Hoards (2 × 5)	"Active" Money (2 − 6)	v (Assumed; Average Minimum $h = 0.15$)	h (Computed from 3 and 8)	Hoards (2 × 9)	"Active" Money (2 − 10)
	1	2	3	4	5	6	7	8	9	10	11
1921	59.18	21.23	2.79	3.60	0.23	4.79	16.44	3.80	0.27	5.65	15.58
1922	59.69	20.14	2.96	3.60	0.18	3.56	16.58	3.80	0.22	4.43	15.71
1923	68.55	21.34	3.21	3.60	0.11	2.30	19.04	3.80	0.15	3.30	18.04
1924	69.95	22.11	3.16	3.60	0.12	2.68	19.43	3.80	0.17	3.69	18.42
1925	73.13	23.80	3.07	3.60	0.15	3.48	20.32	3.80	0.19	4.55	19.25
1926	76.75	24.07	3.19	3.60	0.11	2.76	21.31	3.80	0.16	3.88	20.19
1927	77.22	26.70	2.89	3.60	0.20	5.25	21.45	3.80	0.24	6.38	20.32
1928	79.24	27.27	2.91	3.60	0.19	5.26	22.01	3.80	0.24	6.41	20.86
1929	83.00	27 33	3.04	3.60	0.16	4.27	23.06	3.80	0.20	5.49	21.84
1929	82.06	27.33	3.00	3.60	0.17	4.54	22.79	3.80	0.21	5.74	21.59
1930	74.52	26.32	2.83	3.51	0.19	5.08	21.24	3.71	0.24	6.23	20.09
1931	63.45	24.44	2.60	3.42	0.24	5.89	18.55	3.61	0.28	6.87	17.57
1932	49.32	21.03	2.35	3.33	0.30	6.22	14.81	3.52	0.33	7.02	14.01
1933	46.83	20.53	2.28	3.24	0.30	6.08	14.45	3.42	0.33	6.84	13.69
1934	54.01	23.56	2.29	3.24	0.29	6.90	16.66	3.42	0.33	7.77	15.79
1935	58.81	26.88	2.19	3.24	0.32	8.74	18.14	3.42	0.36	9.68	17.20
1936	67.85	31.10	2.18	3.24	0.33	10.17	20.93	3.42	0.36	11.27	19.83
1937	71.78	31.75	2.26	3.24	0.30	9.59	22.16	3.42	0.34	10.76	20.99
1938	66.24	31.50	2.10	3.24	0.35	11.05	20.45	3.42	0.39	12.13	19.37
1939	70.09	35.05	2.00	3.24	0.38	13.42	21.63	3.42	0.42	14.55	20.50

Columns 1, 2, 6, 7, 10 and 11 are in billions of dollars. Two sets of figures are shown for 1929 because of a shift in the sources of the income data, explained below. The composition of the figures is as follows, by columns:

1. National income. 1899–1929: the series for "realized national income" compiled by the National Industrial Conference Board and published in their *National Income in the United States*, 1799–1938 (1939), p. 6. 1929–1939: the series for "income payments" compiled by the Department of Commerce and published in the *Survey of Current Business*, October, 1940, p. 17. The two series were spliced by multiplying the Board series by the ratio (1.044) between the slightly higher Commerce series and the Board series in the period (1929–1938) common to both series. In this period, the two series fluctuated closely together, though at slightly different absolute levels. Two values are shown for 1929, to permit separate treatment of the two different sets of data. These two series seem to be the best available for the present purposes, but neither of them corresponds precisely to what seem to me to be, on theoretical grounds, the best definitions of "national money income." On this question of definitions see Appendix IV, below.

2. The stock of "circulating" money is currency outside of all banks and the Treasury, plus estimated demand deposits in the hands of the general public and of governments, on June call dates. 1899–1934: from my *Behavior of Money* (1936), p. 175. 1935–1939: computed on the same basis. The jump in the figures in 1913–1914 is presumably in largest part not "real" but is due to better reporting, with the inauguration of the Federal Reserve system, of the items used to estimate circulating deposits from total deposits.

3. The estimated average annual circular or income velocity of circulating money, v': col. 1 divided by col. 2. The failure of v' to move with the business cycle at all points is explained, at least in part, by the known defects of the income and the money data, especially before 1919. On the drop in the figures in 1914, which is presumably "too large" a drop, see the note on col. 2.

4. The estimated average annual circular or income velocity of "active" money (circulating money less hoards), v, was obtained for 1899–1929 by taking the average value of v' in the 6 years in that period for which v' was at peaks (1899, 1909, 1913, 1918, 1923, 1926) and then computing v for those years on the assumption that the value of h (the ratio of hoards to circulating money stock) for the *average* of the peak years was 0.10 [see equation (9.5) in the text: $h = 1 - v'/v$]. This gives an average value of v for the peak years of 3.60 per year. It was then assumed, because of the virtually horizontal trend of v' in 1899–1929 and of the stability in payment habits and schedules which this horizontal trend implies, that v maintained this same value in all other years of the period; and hence

that the fluctuations in v' were due wholly to opposite movements in the relative size of hoards h. For 1929–1939, it was assumed that the profound structural and other changes in the economy following 1929 lowered the value of v enduringly, by as much as 10 per cent by 1933. The value of v in 1933 and subsequently is therefore taken as 3.24, and values for 1930–1932 are obtained by straight-line interpolation. Note that if v is assumed to have maintained the same value after 1929 as before, the estimated values of h and of hoards in 1930–1939 would be correspondingly higher than those shown in the table and of "active" money lower. The value of hoards would be 2.1 billion dollars higher. A more detailed account of these procedures was given in Chap. IX, Sec. 3. The persistently low levels of v' in 1901–1907 were commented on in a footnote in Chap. IX, Sec. 4.

5. The ratio h between hoards and the stock of circulating money, of which they are a part, was computed from cols. 3 and 4 by solving equation (9.5) in the text for h, on the assumption that the average minimum value of h in the years when v' was at peaks was 0.10 (see the note on col. 4).

6. The absolute size of money hoards: cols. 2 × 5.

7. The stock of "active" money: col. 2 minus col. 6.

8 to 11. Computed like cols. 4 to 7, except that the average minimum value of h is assumed to have been 0.15.

Appendix III

ESTIMATES OF THE CONTRIBUTIONS OF GOVERNMENT DEFICIT SPENDING AND OF CHANGES IN PRIVATE INVESTMENT TO NATIONAL INCOME: SEMIANNUALLY, 1929–1939

Half Year	National Income	First Differences of Income	Net Government Deficit Spending (Ig)	Effect on Income of Changes in Actual Private Investment (2 − 3)	Column 4 Led One Half Year	$\Delta Y/\Delta M$: Annual Values	$\Delta Y/\Delta M$: Semi-annual Values	ΔIp: Estimated Changes in Private Investment Commitments (5 ÷ 7)
	1	2	3	4	5	6	7	8
1929: I	40.2	.....	0.4	....	+1.5	....	1.50	+1.0
II	41.9	+1.7	0.2	+1.5	−3.6	3.00	1.50	−2.4
1930: I	38.6	−3.3	0.3	−3.6	−3.5	....	2.49	−1.4
II	35.9	−2.7	0.8	−3.5	−3.6	4.99	2.50	−1.4
1931: I	33.5	−2.4	1.2	−3.6	−4.6	....	2.49	−1.8
II	30.0	−3.5	1.1	−4.6	−5.2	4.99	2.50	−2.1
1932: I	26.0	−4.0	1.2	−5.2	−3.7	....	2.49	−1.5
II	23.3	−2.7	1.0	−3.7	−2.2	4.99	2.50	−0.9
1933: I	22.2	−1.1	1.1	−2.2	+2.0	....	0.88	+2.6
II	24.6	+2.4	0.4	+2.0	−0.1	1.75	0.87	−0.1
1934: I	26.3	+1.7	1.8	−0.1	−0.3	....	0.88	−0.3
II	27.7	+1.4	1.7	−0.3	−1.0	1.75	0.87	−1.1
1935: I	28.4	+0.7	1.7	−1.0	+0.5	....	0.88	+0.6
II	30.4	+2.0	1.5	+0.5	−0.3	1.75	0.87	−0.3
1936: I	32.1	+1.7	2.0	−0.3	+1.5	....	0.88	+1.7
II	35.7	+3.6	2.1	+1.5	−1.2	1.75	0.87	−1.4
1937: I	35.2	−0.5	0.7	−1.2	+1.3	....	0.88	+1.5
II	36.6	+1.4	0.1	+1.3	−5.2	1.75	0.87	−5.9
1938: I	32.2	−4.4	0.8	−5.2	+0.2	....	0.88	+0.2
II	34.0	+1.8	1.6	+0.2	−2.0	1.75	0.87	−2.3
1939: I	33.9	−0.1	1.9	−2.0	+0.5	....	0.88	+0.6
II	36.2	+2.3	1.8	+0.5	−2.2	1.75	0.87	−2.5
1940: I	35.6	−0.6	1.6	−2.2				

Columns 1 to 5 and 8 are in billions of dollars. The sources and meaning of the items are as follows, by columns:

1. National income: the semiannual sum of the monthly estimates of "income payments" published in the *Survey of Current Business for October* (1940), p. 17. Also see Appendix II, above.

2. The first differences of income: computed.

3. Net government deficit spending: the estimated net sum of all Federal, state and local government expenditures, which presumably increase the national income, in excess of the income-decreasing receipts of such government bodies. These estimates are taken by permission from the recently published book by Henry H. Villard, entitled *Deficit Spending and the National Income*. The contribution of the state and local governments to the net totals was, in 1929, 1930, 1931 and 1932, respectively, 898, 845, 567 and 353 million dollars. In 1933, it was negative and thereafter never so large as 200 million dollars a year. In 1938, Villard's estimates for net Federal income-increasing expenditures alone are somewhat higher and in 1939 are substantially higher than the familiar but unpublished estimates, made for 1932 and later, by the Board of Governors of the Federal Reserve system. In 1932–1937, Villard's estimates are lower. No attempt will be made here to express an independent judgment of either set of estimates.

4. The income effects of private investment. The largest part of net government deficit spending as estimated has been spending for relief, WPA and other purposes which have added to individual incomes at once, rather than spending for goods. The larger part of the initial effect produced on income by deficit spending was therefore felt, on the average, in the same half year as that in which the deficit spending itself occurred. We shall hence assume as an approximation that the income effect in each half year was precisely equal to the deficit spending of that half year. This is tantamount to assuming that each act of such spending (which was continuous throughout every half year, though fluctuating in volume) increased income above the level which would *otherwise* have prevailed by an equal amount at the end of 3 months, on the average; we may thus somewhat underestimate the income effect. The remainder of the actual changes in income, or col. 2 minus col. 3, is due in some slight part to the assumed fall in the circular velocity v of "active" money (Appendix II, above), but is due chiefly to changes in private effective hoarding. For lack of adequate information, we shall here disregard any "original" changes in consumption expenditures due to changes in general anticipations (though they must have been substantial in 1929–1931) and shall assume that these changes in private hoarding reflect opposite changes in the sum of private business and individual investment commitments. Column 4 shows the effects of such changes in private investment commitments on income; the effects of the small assumed change in v are ignored.

The term "investment commitments" is not unambiguous, however, and requires explanation. It represents an attempt to measure, in terms of money volumes, the magnitudes of individual and business-firm decisions to buy new investment goods and services. If a shoe-manufacturing firm

places an order for new machinery, for example, and if the machine builder then constructs the machine and delivers it, for present purposes there are three important steps in the total operation: the original decision to buy the machine; the flow of payments from the shoe-manufacturing firm to the machine builder and the consequent direct or indirect disbursement of money incomes to individuals as the machine grows; and the final delivery of a finished unit of new investment goods—the machine—to the investor. If we measure the volume of new investment by the volume of delivery of finished investment goods, however, then in this case the act of "investment" occurs *after* most of the resulting individual money incomes have been paid out, and it would be impossible to "explain" a change in the volume of investment as thus measured by these chronologically prior changes in income (Chaps. VII and VIII). Clearly what is important here are the decisions or commitments which preceded such changes in incomes and production. Our term "investment commitments" is hence, to repeat, an attempt to measure the volume of these decisions in money terms: that is, in the case of individuals, to measure the volume of individual incomes received currently (or previously hoarded), which it is now proposed neither to consume nor to hoard (nor to continue hoarding); and, in the case of business firms, the volume of business receipts which it is proposed neither to hoard, to disburse to owners nor to disburse to other individuals or firms to pay for the current replacement of stocks or of goods in process.

5. Changes in business and individual investment commitments usually occur at substantially earlier dates than the consequent income changes, as just pointed out, since only a small part of the funds intended for new investment is usually spent *at once* for services or to provide other individual incomes. Since the average value of the reciprocal of the annual circular velocity of money, or $1/v'$, for private and public spending of all kinds, ranged from just over 4 months in 1929 to 6 months in 1939 (Appendix II, above), the full effect on income produced by an act of new private investment occurring in the middle of one half year was presumably not felt, on the average, until the next half year (Chap. IX, end of Sec. 2, above). Moreover, since the initial effect of most government deficit spending on income was probably rapid, the average interval for private investment alone was probably substantially greater rather than less than the range of 4 to 6 months. To allow for this lag in the table, and as a first approximation, we therefore move col. 4 back half a year in time.

But this is still not sufficiently accurate, for a period of 6 months is long enough so that account must be taken of the money-velocity factor. Assume that the private investment commitments of each half year take place at the mid-point of that half year and that their effects on income are measured at the mid-point of the next following half year, or 6 months later. This lag we have already taken account of in col. 5, which is obtained

by moving col. 4 back half a year in time. We can then estimate the size of changes in private investment commitments from the changes in income which they produced, as thus calculated. To do this, we assume that *all* changes in the volume of new private investment, whether accompanied

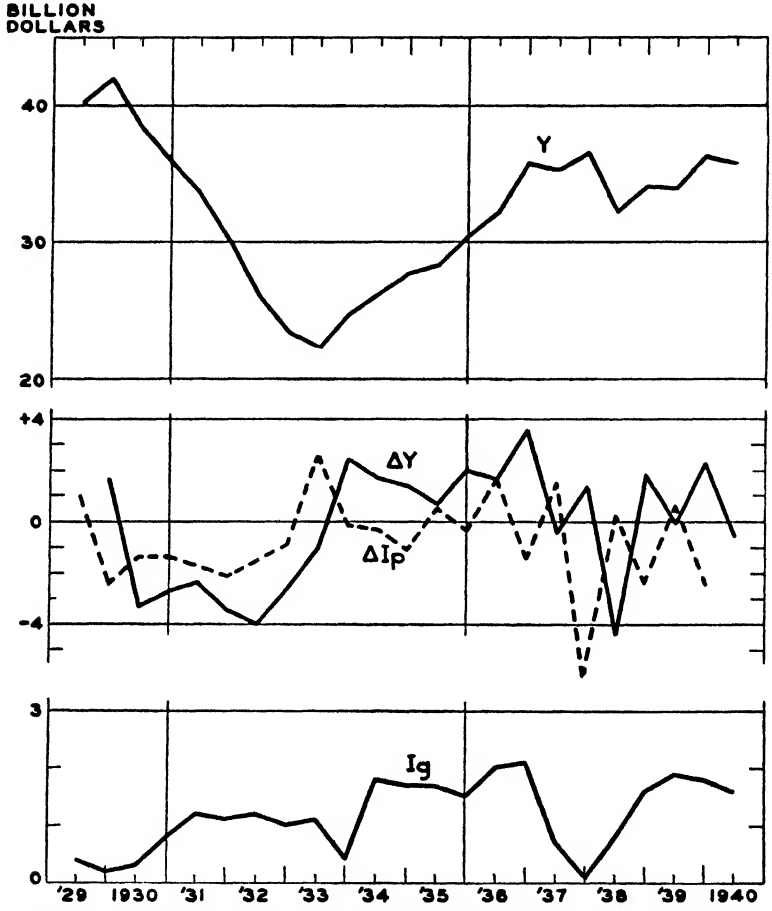

CHART IV.—National income (Y), changes in national income (ΔY), estimated changes in private investment commitments (ΔIp) and net government income-increasing expenditure (Ig): semiannually, 1929–1940.

by changes in the money stock or not, produced changes in subsequent national income in the same ratio as the incremental or marginal ratios between income and money stock discussed in Chap. IX, Sec. 4; in 1929–1939, these marginal ratios were substantially different from the *average* ratios.

6. In col. 6, we therefore give these marginal ratios ($\Delta Y/\Delta M$) on an annual basis. In 1929, the average and the marginal ratios are assumed to have been substantially equal. For the period 1930–1932, and again for 1933–1939, the value of the regression slope (or *average* marginal ratio) within each period is shown, to smooth the income effects. For these slopes, see Chap. IX, Sec. 4.

7. In col. 7, we give the same ratios on a semiannual basis.

8. Dividing the income changes of col. 5 by these semiannual marginal values gives what we are after, namely, the estimated changes in private investment commitments in each half year which produced those actual income changes of a half year later, shown (after adjustment for the effects of government deficit spending) in col. 4.

For convenience, the movements of the national income Y, the first differences of income ΔY, changes in new private investment commitments as thus estimated, ΔIp, and government deficit spending Ig are shown graphically on Chart IV. The movements of the private-investment-commitment curve are consistent with the self-generating cyclical hypothesis presented in Chaps. VII and VIII, above, especially if the several curves of the chart are roughly smoothed, and also appear to be consistent with what is generally assumed to have been going on in the private investment field in these years. This obviously, however, is not a "proof" of anything, for the curve ΔIp is constructed in largest part from the curve ΔY, not from data which are independent of the latter. Indeed, the ΔIp curve *is* the ΔY curve minus government deficit spending, then led half a year and then adjusted for the money-velocity factor. The ΔIp curve is logically significant, therefore, only so far as the assumptions on which it is derived are thought legitimate and sufficient, and only so far as it seems consistent with other data and events. In the opinion of the present writer, it has substantial significance on both counts, but this opinion is based primarily on judgment and argument alone, not on direct statistical evidence.

The results obtained are not much altered if government deficit spending is regarded as producing its chief effects on income in the following instead of in the same half year.

The total net change in the sum of annual private new business- and consumer-investment commitments as thus estimated, from the beginning of 1933 to the end of 1939, was minus 6.7 billion dollars—a finding which lends support to the political contention that capital was in some sense "on strike," if the reasons for the strike are disregarded (on these, see Chap. XIII, Sec. 5). Note, however, that this is only the total *change*, over 6½ years, in private new investment commitments; as shown by Kuznets' figures, the absolute volume itself remained substantial throughout. The total volume of government deficit spending in the same period was 20.8 billion dollars.

Semiannual data were used in the foregoing computations because monthly and quarterly data fluctuate too widely to show simple and easily grasped graphic relations, and require a more complex treatment of the money-velocity factor. The annual data are obviously insensitive and also conceal or distort the lags.

In comparing these estimates of private business and consumer investment with data of other sorts, it must be emphasized that the estimates really do attempt to show changes in only the money volume of investment *commitments*. Resulting changes in the flow of money incomes to individuals usually come at somewhat later dates, and changes in the flow of actual investment goods to final users at still later dates—perhaps half a year or more after the original changes in investment commitments.

In connection with the central argument of Chaps. VII and VIII, it may also be pointed out that in 1930–1937 the ΔY curve has fairly good prediction value for the movement of the Y curve (a roughly horizontal movement of the ΔY curve being taken as a "forecaster" of a constant rate of change in the Y curve). The lows of mid-1938, however, are simultaneous.

Appendix IV

THE DEFINITION OF NATIONAL MONEY INCOME AND NATIONAL PRODUCT

IN this book we have made extensive use of the concept of the national money income, and of various sets of statistical data on income. We have hitherto attempted no systematic examination of the logical content of the income category, however, or of the relation between national income and total current output. I think that certain not insubstantial problems still exist with respect to both the statistical measurements and even the logical concepts here involved, despite the tremendous progress in the study of national income which has been made in recent years. The present appendix is an attempt to clarify some of these problems.

The discussion will be made as brief and schematic as possible. Only production and exchange operations undertaken in return for money, or in the expectation of receiving money payments later, will be considered. All barter operations, all production for own use, and all "imputed" production or income (such as the "income" derived from living in a house one owns) are excluded. The exchange of all previously issued securities, of land, and of all other previously existing assets is likewise excluded; so are all so-called capital gains and losses. In analyzing the operations of production and exchange for money, it will also be sufficient to confine attention to four principal categories and the relations among them. The categories are: the total money receipts of business enterprises from the sale of current output, R; the money value of the gross national product that is sold for money, Og, which is identical in most cases with total business receipts as just defined, but which it is convenient to record separately; the money value of the net national product that is sold for money, On, which will be defined later; and the national total of the incomes actually received by individuals in money from producing the national product, Y. We begin by listing the principal operations which do or may affect each of these categories, taking each operation in isolation as far as possible. Then, by simple summation, we shall obtain the total picture of an economic society of the American type in action.

1. The money value created by firms making and selling consumers' goods and services, or added by such firms to the intermediate products of other firms, is a for any period. Then if we abstract from all other operations and factors, for each period $R = a = Og = On = Y$. If the seller of

consumers' goods is an individual, such as a physician, either the R term drops out or the individual must be classed as a "firm." This qualification is substantial, but need not be repeated in what follows. We shall assume that consumers' goods or services sold by individuals are actually included by the statistical compilers in R. Then in the present case, R always equals Og.

2. The value of raw materials extracted and sold by one set of firms to other firms is b. If we assume only two firms, one producing only such raw materials and the other selling only consumers' goods, the value of the consumers' goods is now $a + b$. But the value of the raw materials taken alone is also equal to the current business receipts, and is hence part of the gross product, of the raw-materials firm. Hence for the economy as a whole, other factors apart, $R = a + 2b = Og$, whereas $On = a + b$ alone. Also, $On = Y$. In more complex societies, b relates to investment goods as well as to consumers' goods; and the coefficient of b would usually be larger than 2, because on the average more than one inter-firm duplication is involved. In what follows, we shall hence write ub, instead of $2b$, and shall include any other supplies with raw materials.

3. The value of new investment goods produced and sold for replacement purposes alone is c. Then analogously with the preceding paragraph, assuming a total raw-materials production of a, and representing the (unmeasured) duplication of c by the coefficient z, we have $R = a + ub + zc = Og$. But $On = a + b + c = Y$.[1] Evidently if R and On have the same absolute size as in the preceding case, a and b must now be smaller than before. The latter qualification also applies in various subsequent cases, but will not be repeated.

4. The value of net additional equipment which is bought by individuals *out of their current incomes*, for use by business firms, is d. Such operations effectively occur whenever individuals use current income to buy new corporation securities, for example, provided the proceeds to the firms are used as indicated. The operations reduce current individual purchases of consumers' goods, but simultaneously increase current purchases of new investment goods by an equal amount. If we follow the prevailing statistical practice, and count net additions to business equip-

[1] The concept of capital "consumption," so far as that consumption is different from actual replacement expenditures, will not be used here. If the society fails to maintain its capital stock intact, this fact will presently have serious consequences both for the owners of the enterprises involved and for the general welfare. But the capital deficit, even if it could be estimated with any assurance, cannot be subtracted from the actual national product and income of the period in order to obtain "true" figures. The principles of national income accounting are not the same as those of private-business income accounting; neither the national income nor the net national product are categories analogous to the net profits of private business.

ment as part of the current net national product, then the *total* size of the terms *R*, *Og*, *On* and *Y* and the relations among them are not changed by such operations taken alone, though the internal composition of the terms is altered. Hence the term *d* cancels out in our equations.

5. The value of net additions to their equipment which are bought by business firms themselves *out of current sales proceeds* is *e*. Firms cannot obtain funds for such purposes by charging consumers more, since individual incomes have not been increased. They can obtain the funds only by reducing the total of their current outpayments, made to individuals as income and to other firms for producers' goods, below their own current sales proceeds. If the funds are initially obtained by reducing payments to other firms, however, then these latter firms (other things equal) must in turn reduce their own income payments to individuals. Either way, at the end the funds hence come out of current individual income payments. But the funds thus obtained are promptly spent again on net additions to equipment, thus making good the previous decrease in individual income payments and hence that in current outlays by individuals. For the period as a whole, the sizes of individual incomes and of individual outlays are unchanged. Since net additions to business equipment are counted as a part of net product, however, this net product is now *larger* than before by the amount *e*. We then have, for the period as a whole, $R = a + ub + zc + e = Og$, while $On = a + b + c + e$. But $Y = (a + b + c - e) + e$ only. Hence $On = Y + e$. The difference thus created between *On* and *Y*, which did not appear in the preceding case, is not a mere matter of definition. It is "real," and reflects the fact that in private-business economies, business firms are interposed between individuals on the one side, and production, consumption and investment on the other. In both this case and the preceding one (para. 4), there is no interruption or decrease in the flow of incomes to individuals and no decrease in total individual outlays on the sum of consumption and net additional equipment combined. But in the present case the money paid out by firms buys net additions to business equipment on its way back to individuals; and these purchases cause the sum of such additions to equipment plus outlays on consumption, made in the given period, to exceed the sum of the money incomes received by individuals in the same period. If net national product were defined to be the output of consumers' goods and services alone, then in the present case *On* and *Y* would be equal; but in the situation of paragraph 4 we would have found an *opposite* difference. We would have found that $On = Y - d$.

6. The value of any amortization of existing equipment and the like which is charged by firms *against current sales proceeds* is *f*. Such amortization may either be paid to bondholders and other creditors in cash, or be credited to the surplus or reserve accounts of equity holders. Such sums

can again be obtained ultimately only by reducing current income payments to individuals below current sales proceeds. Since the receipt of amortization payments or credits is not commonly counted as income, however, current income will again fall below current sales proceeds and net product with respect to these operations. That is (disregarding net additions to equipment), here $R = a + ub + zc = Og$, while $On = a + b + c$. But $Y = a + b + c - f$, only. Therefore, here $On = Y + f$. The same relations hold for depletion charges in excess of true depreciation of equipment.[1]

7. Under current practice, additions to business inventories between one arbitrarily selected accounting date and the next are also counted as part of the net national product. This seems unrealistic in some ways, especially with respect to decreases; and the addition of changes in stocks to absolute flows, which it entails, is disturbing. We shall of necessity, however, accept this practice here. If the funds required are obtained from current individual incomes, the effects are those of paragraph 4, above; if from the current sales proceeds of firms, they are those of paragraph 5.

8. The amount of any net accumulation of money by individuals, in any period, is g. By "accumulation" is meant simply that the group in question holds more money at the end of the period than at the beginning.[2] To avoid needless complications, we may also lump government bodies and foreigners with business firms as a single group, thus dividing the universe into two groups alone. Then if the total money stock is fixed and individuals accumulate an amount g, the other group must discumulate

[1] Presumably much of the depreciation reported on corporation balance sheets represents what looks like concealed amortization, but actually is not. Many corporations show a 30 or 40 per cent write-off from the cost value of plant, for depreciation, yet are making adequate depreciation expenditures currently, and are *not* holding corresponding amounts of idle cash or liquid securities. Such accounting procedures write down the book value of the equity, but leave its "real" value unaltered, and are not true amortizations. The equity holder receives neither cash, nor stated credits in surplus or reserve accounts.

It can evidently be argued that the disparities between sales proceeds and income distributions to individuals, which are enforced by making net business investments and amortizations out of sales proceeds, are a third Achilles' heel in private business-enterprise capitalism—the other two being the contractions in general activity enforced by voluntary hoarding and (temporarily) by shifts in the direction of current outlays as between consumers' goods and net additional investment goods.

[2] Net "accumulation" by a group need not be identical with increased effective "hoarding" by that group, under the definition of hoarding previously given. The latter is specially defined in terms of normal maximum income-expenditure periods, the former in terms of chronological periods alone.

an equal amount, on balance: the algebraic sum of these changes is here always zero.[1] If individuals accumulate g, however, they can do so only by reducing their current purchases of consumers' and investment goods below their current incomes. Hence if the money stock remains fixed, and other things equal, $On = Y - g$. If individuals discumulate (that is, if business firms and others *accumulate*), g itself assumes a negative value, and the same formula holds.

9. The amount of any net increase in the stock of "active" money *which goes initially to individuals* or which is spent initially by them is j. Such an increase can come either from increases in the total stock of money or from dishoarding. It is not itself, however, an increase in current individual income. The spending of the sum j increases the gross and the net national products equally; and if business firms do not accumulate money net, their own payments of incomes to individuals will also increase by j. Similarly, the amount of any net increase in the stock of "active" money *which goes initially to business firms*, or which is initially spent by them, is k. If individuals in turn do not accumulate money net, then individual incomes and the net and gross products will all be increased equally, by k. The initial effect of changes in the stock of "active" money is, therefore, $\Delta Og = j + k = \Delta On = \Delta Y$. These operations do not require, however, that any corresponding changes be made in the preceding equations. Additions to the stock of "active" money are used, by the very definition of such money; as just shown, they produce equal effects upon the product and income terms in those equations; and the equations themselves hence remain valid even for periods in which such operations are taking place (though the absolute sizes of the product and income terms will be larger than before, other things equal). All that is necessary is that the term g be redefined to be any net increase in money holdings by individuals which is *greater* than the contemporary net increase in the holdings of the total of business firms, governments and other groups. Analogous conclusions apply, conversely, to a decrease in the stock of "active" money. Thus either the "hoarding" of money or a repayment of bank loans by business firms, other things equal, imposes a discumulation of money on individuals.

10. If all of the operations thus far described go on simultaneously, we have (writing out all the terms)

$$R = (a + ub + zc - d) + d + e = Og,$$
$$On = (a + b + c - d) + d + e = Y + e + f - g.$$

That is,

$$On = Y + e + f - g.$$

[1] If both groups attempt to accumulate money simultaneously and in equal amounts, and if the money stock is fixed, neither can succeed.

It is thus logically possible, though improbable in fact, that Y will exceed On. Usually the opposite relation prevails.

11. These conclusions are not quite the same as those reached by Dr. Kuznets,[1] and by the Department of Commerce in its current compilations. First, neither set of studies appears to take explicit account of the amortization factor f; and Kuznets, at least, takes no explicit account of net money accumulation, g. The Department has at times recognized the latter factor, but in a way which implies a necessary relation between such accumulation and business saving.[2] This implication, on any legitimate definition of business saving, seems to me erroneous. Second, Kuznets' computations make net business saving equal to the difference between net national product and income payments to individuals, or to $(On - Y)$ in terms of the foregoing equations (for convenience, we may ignore government operations). His procedure in estimating net business saving, however, indicates that his net business saving consists only of our term e plus, probably, net accumulations of money by business firms (that is, plus a part of g); he estimates net business saving directly from net business profits as reported, minus dividends paid. He must therefore have left out the remainder of g, or accumulations by governments and foreigners (see below), and all of the amortization factor f. As shown by the last equation above, these terms must actually be included in computing the relations between net product and income payments to individuals. Third, his estimate of gross national product makes allowance for duplications in the value of investment goods intended for replacements (our term c), but not for duplications in the value of raw materials and other supplies (our term b). Fourth, a less important point, his method tacitly implies that depreciation charges as entered on the books of firms and actual current expenditures on replacements are substantially equal: that is, that this part of gross "saving" is identical with gross investment. The actual wide variability in the relation of such charges to such expenditures necessarily makes this procedure somewhat hazardous. Finally, it is obvious that the total of *all* net additions to the equipment and inventories of business firms is the sum of net business investment paid for by the firms themselves *plus* that which is paid for by individuals, banks and governments. This is the sum of our terms d and e, plus most of k and probably a part of j (para. 9, above). Kuznets' estimate of net business saving is therefore an inadequate guide to the actual growth of our *total* investment in business enterprises.

[1] Simon Kuznets, *National Income and Capital Formation*, 1919–1935 (1937), especially pp. 8 and 24.

[2] See the *Survey of Current Business* (June, 1940), p. 7. In the Department of Commerce compilations "income paid out," if accurately computed, should exceed "income produced" by the amount of our term g.

12. Some comments may also be made on a related but different problem, that of estimating total income payments to individuals. Such payments can come from other individuals, from business firms, from governments, or from abroad. There is no disagreement about the inclusion of wages, salaries, profits, interest or rent (minus any related expense payments made in the given period), but the treatment of certain other categories is more puzzling. I shall again merely state some conclusions, without offering substantial proof.

13. Pension and compensation payments by firms should be included with individual income payments. They either are charged to current sales proceeds or come from discumulations of money by firms, and in either case are not counted as income anywhere else in the system. Over periods long enough so that changes in money accumulations can be disregarded, they are part of the cost of current output, and affect our terms *R*, *Og* and *On* equally. But private philanthropic payments are not a charge against current output, and should be excluded to avoid a non-significant duplication.

14. With respect to government operations, all government payments to firms should be excluded, since they do not constitute individual income; but the following should be included: (*a*) payments to individuals for services actually rendered, as by officials and clerks; (*b*) Social Security benefit payments, since these come either out of current contributions (and are thus a part of the cost of producing the current national product) or out of government discumulations; (*c*) relief and interest payments made from the proceeds of taxes on business firms or of deficit financing, since these are income disbursements not counted anywhere else in the system. If the net national product is defined to include all government-provided goods and services, as it should be, then these three items are all part of the cost of this product. But the last of these three classes of payments should be excluded so far as the payments are made from the proceeds of direct or indirect taxes on individuals; for in this case such payments are merely transfer incomes. To include them would hence entail a non-significant duplication. A rough estimate of the part of this third class of payments which should be included can be obtained through multiplying the total of such payments by the ratio between the sum of the proceeds from taxes on business firms plus the proceeds of deficit financing, as numerator, and as denominator government receipts from *all* sources. Government accumulations and discumulations of money, incidentally, should be included with those of business firms, since they have the same effects.

15. With respect to international transactions, merchandise and service exports are a part of the net national product and give rise to individual incomes in the same amounts, other things equal. Such production and

income operations are already included in the corresponding items in the preceding equations, however, and do not need to be added in separately. Merchandise and service imports, on the other hand, are not a part of the national product and in themselves do not give rise to individual incomes. Any *difference between* such exports and imports causes individual incomes to exceed individual outlays on goods and services to a corresponding extent, or conversely, but we have not been concerned with the latter problem here. International movements of newly mined gold and silver should be treated like merchandise movements. The remaining classes of international transactions are not so easily disposed of. Property-income payments made by firms to foreigners reduce domestic income payments to individuals, other things equal. They therefore cause the latter to drop below current sales proceeds, and hence below net national product. On the other hand, property-income receipts from abroad *may* add to individual income payments alone, without being paralleled by any current increment to domestic output. This is clearly true for all payments made directly to individuals, and for payments made initially to firms but then paid out by them as income to their owners. When such payments are initially received by firms, however, they may also be used directly to make net additions to investment, thus increasing net product and individual incomes together. Hence adding the net excess of all such international receipts over payments to the net national product, in order to obtain the total of all individual incomes received, is likely to exaggerate the excess relevant for present purposes, and to yield somewhat too high a figure for individual incomes. Moreover, in terms of banking mechanics, making such payments by firms to foreigners means the payer must first surrender money to his bank, thus altering the size of both the stock of "active" money and our g term; and conversely. This creates a danger of double counting, in estimating the effects of such international income payments on the total income-net product relation. International income payments to and from individuals or non-business enterprises similarly affect both the stock of "active" money and the g term. In the main, such payments are likely to be made at the expense of individual outlays on domestic products, thus causing current income to exceed net product; and conversely. Exports of previously mined monetary gold, on the other hand, when shipped for private account, are usually made at the ultimate expense of income payments to individuals. But movements of such gold between central banks or governments, like all international movements of securites, short-term capital, and other titles and claims, are best regarded as operations within the "financial" circulation itself, and hence as not relevant to the present discussion.

Taking the international group of transactions as a whole, therefore, we reach the following conclusions: (*a*) Gross exports of merchandise,

services and newly mined gold or silver should be counted as part of the gross and the net national products; (*b*) income payments to individuals reported from domestic sources should be increased by the amount of any *gross* property-income payments received from abroad and going directly to individuals, since such receipts are not reported anywhere else in the system; (*c*) total income payments to individuals as thus adjusted will now exceed the net national product by the algebraic sum of *most* of the *net* excess of international property-income receipts over payments (omitting receipts used by firms to make net additions to investment), plus the net excess of international non-commercial income receipts over payments, plus the net excess of monetary gold imports for *private* account over exports. These net items each produce the equivalent of a net accumulation of money by individuals, and are best handled, in the preceding equations, through the g term. We may let their algebraic sum be g''. The term g'' cannot be added to the term g as previously set up, however, for to do so would entail double counting. It is merely one component of g.

16. Thus neither pensions, compensations nor government operations require any modification in the general form of the preceding equations. The effects of the international transactions can also be compassed within the terms previously set up, but require that additions be made to the content of certain of the terms as reported from domestic operations alone. Moreover, some of the international items have effects upon the money-accumulation term which it is convenient to segregate, because the data on purely domestic sources of change in this term are incomplete. Let the net accumulation of money by individuals arising out of international operations alone be g'' (see the preceding paragraph), and out of purely domestic transactions be g' (see para. 9, above). Then the sum of g' and g'' is our previous term g, and we can write

$$On = Y + e + f - g' - g''.$$

This treatment of the international items appears to be somewhat different from that adopted by Dr. Kuznets and the Department of Commerce.

17. We have thus established the relations between gross and net national products and income payments to individuals. In earlier parts of the present book, we used the latter category as the sole measure of "national money income." It is obvious, however, that other measures are also defensible. One is money outlays by individuals on consumers' goods and services. This is a better measure of current "real" economic welfare, so far as this welfare arises out of money-using transactions, than money income payments. Its numerical relation to individual money income payments can be worked out readily; and over periods long enough so that changes in money hoardings or money accumulations by individuals roughly cancel out, it will yield the same marginal and "multiplier"

relations as income payments. It is also identical with the net national product on one possible definition (suggested above) of the latter term. If the measurement of "real" economic welfare or its changes is the ultimate objective, however, what is required is an index of the "real" value of *all* individual consumption of goods and services, whether these are obtained for money, or by barter, or are imputed; but there is at present no wholly satisfactory measure of the last two categories. Finally, I do not think that either the net or the gross national products as now defined by the statistical compilers are good measures of "national income," in either the money or the "real" sense. The size of the gross product is profoundly affected by the current degree of business integration, which is not in itself a factor directly relevant to individual-income analysis. The net product as currently defined also contains part, though not all, of the net additions to business investment, whereas such additions are clearly not a component of the income received by any individual.

Index

G

H

I

K

L

M