

# Creation of Income by Taxation

JOSHUA C. HUBBARD  
BRYN MAWR COLLEGE

Harvard University Press  
CAMBRIDGE, MASSACHUSETTS  
1950

COPYRIGHT, 1950

BY THE PRESIDENT AND FELLOWS OF HARVARD COLLEGE

PRINTED IN THE UNITED STATES OF AMERICA

LONDON : GEOFFREY CUMBERLEGE  
OXFORD UNIVERSITY PRESS

TO  
M. B. H.

## PREFACE

This book sets forth the income-creating power of taxation. The method of taxation will be seen to be preferable to continuous government deficit spending as a means of raising the level in income in an underemployment equilibrium. In many cases, if not most, the former is a more powerful instrument than the latter in creating income. In the long run the income created per dollar of tax outlay may be, and is likely to be, larger than that per dollar of government deficit plus interest. To be sure, this is true only after many income periods; but the method of taxation possesses additional advantages. It follows that government deficit spending should be an interim and temporary solution which precedes and helps to establish income creation by means of taxation.

These conclusions follow from the analysis, which is perhaps the only contribution of this essay. The analysis applies the multiplier technique to the theory of tax incidence. There is here little originality in either field separately. Nevertheless, as Professor Clark writes, "good, fresh answers do not have to wait for the discovery of some mysterious and hitherto unknown device or principle. They are generally reworkings and recombinations of material that is not wholly new." (John M. Clark, *Demobilization of Wartime Economic Controls*, p. 203.)

Being a combination of the multiplier technique and the theory of tax incidence, this essay is on a high level of abstraction. In my opinion, however, the conclusions which follow from this approach justify the necessary effort. Income creation by means of taxation provides the missing instrument in an inclusive general policy, the purpose of which is to meet not only the problems of cyclical fluctuations but also the problems of secular stagnation.

I wish to express my deep gratitude to those who took time out of their already crowded lives to criticize my work, for it is through criticism that one progresses. Professor Arthur E. Mon-

roe in editing my article in the *Quarterly Journal of Economics*, from which this book developed, made many stimulating suggestions. Professor Seymour E. Harris has my lasting gratitude for urging me into additional effort and for many helpful criticisms of the final draft. I am also grateful to Professor W. Rupert Maclaurin, an old friend and classmate, for reading an early draft of the manuscript and for suggesting many helpful changes in its form and organization. Particular thanks go to many Bryn Mawr students too numerous to mention for devoting much of their free time for the past six years to the preparation of the manuscript. It is the better as the result of their many helpful suggestions.

Some of the analysis in Chapters III, IV, and VII has been combined into an article which appeared in the *Economic Journal*, March 1949. This article omits one whole aspect of the problem and serves only as an introduction. I am also indebted to Professor R. F. Harrod for helpful suggestions in the preparation of this article. In conclusion, I wish to thank especially Miss Mary L. Terrien for her careful and skillful reading of the proofs. I am, of course, responsible for all remaining errors.

J. C. H.

BRYN MAWR, PENNSYLVANIA

JANUARY 1, 1950

# CONTENTS

I	INTRODUCTION	1
	The omissions of the classicists. Prolonged depression. General statement of income creation by means of taxation.	
II	THE RESULTS OF TAXING AND SPENDING THE RECEIPTS	8
	The sources of tax payment. The impact of taxation upon investment. General taxation on consumption. Property taxes. Income taxes. Expenditure of receipts to expand private investment. Some examples. APPENDIX: The impact of the personal income tax upon individual saving and investment out of income.	
III	INCOME CREATION BY MEANS OF TAXATION	38
	The assumptions. The variables. The average propensity of individuals to consume. Taxation and the consumption function. Formulas for initial income increment. APPENDIX A: Diagrammatic proof of initial income increment. APPENDIX B: The impact of the proportional income tax upon investment in terms of a diagram.	
IV	THE METHOD, THE MULTIPLIER, AND THE MARGINAL EFFICIENCY OF CAPITAL	62
	Income creation. The simple multiplier. The complex multiplier. Formulation of the method of tax-	

ation. The case of inelasticity. Elasticity greater than unity. The formulation of the elastic case. APPENDIX A: Two approaches. APPENDIX B: The schedule of the marginal efficiency of capital in a modern economy.

- V BROADENING THE SCOPE** 92
- The supply schedule with a positive slope. The personal proportional income tax which corporations ignore. Consumption taxes. Income creation and tax capitalization. Progressive taxation. The first case. Property and corporate income taxes. Introduction to the scope of income creation by taxation. APPENDIX: The second and third cases.
- VI APPROACHING REALITY** 126
- Stable selling prices. Stable prices of the agents of production. Monopolistic competition. The short run. The acceleration principle. The schedule of the marginal efficiency of capital through time. The foreign balance of payments.
- VII A COMPARISON OF POLICIES** 147
- The bases for comparison. The problem of administration. Opposition to the policy. The short-run problem. The long-run problem. A comparison of the policies in the long run. Taxation versus deficit spending.
- VIII AN OVER-ALL POLICY** 170
- The need for an over-all policy. A reasonable objective. Policy for the minor cycles. Policy for the major cycle and the long run. A rising income. The trend in the tax outlay.
- IX CERTAIN MAXIMS OF PUBLIC FINANCE** 188
- Neutrality in the government's budget. A balanced normal budget and progressive taxation. Prevent-

## CONTENTS

xi

ing war inflation by taxation. Government borrowing for capital formation. Government deficit spending.

REFERENCES	212
BIBLIOGRAPHY	225
INDEX	237



# Creation of Income by Taxation

## CHAPTER I

### INTRODUCTION

RECENT LITERATURE SHOWS little interest in the problem of income creation by means of taxation. This essay attempts to fill that gap in present economic theory. The rapid recent development of fiscal policy has concentrated mainly upon government deficit spending, with the result that the analytical techniques which developed this aspect of fiscal policy have been inadequately applied to taxation.<sup>1</sup> Had such an analysis been made, fiscal policy might be regarded with more favor by the orthodox and the present confusion among economists might be less.

Although Professor Hansen admits that taxation and even consumption taxes may be income creating, he believes that government deficit spending is a more powerful means of income creation.<sup>2</sup> He is able to reach this opinion because he fails to state adequately the income-creating power of an increase in taxation and ignores the difference in the power of a deficit to create income in the short and in the long run. On the other hand Sir William Beveridge<sup>3</sup> prefers taxation in the long run, although he reaches this decision on noneconomic grounds and on the condition that taxation and deficit spending are equally possible. He avoids the problem by assuming the hypothesis that the two methods are alternatives. Nevertheless, both men agree that government spending is the only means, at times, of maintaining a high level in income and employment. In contrast to this, B. M. Anderson holds the directly opposite opinion.<sup>4</sup> His advice is to reduce government expenses to balance the budget and to permit a reduction in taxes. This will encourage private enterprise to expand its spending. Anderson ignores the fact that in depression private spending is declining, and that a reduction in government spending would

aggravate this decline and deepen the depression. This wide difference of opinion, which is not confined to these three men but exists generally among economists, can be resolved by the application of the policy of income creation by means of taxation, and each opinion is found to be true within a limited setting.

The following facts raise interesting questions. Within the period 1913 to 1942 in the United States the revenue of all governments increased tenfold,<sup>5</sup> the national income tripled,<sup>6</sup> and interest rates and bond yields were the same at the end as at the outset.<sup>7</sup> Would income have increased more or less if the increase in tax receipts had been less? Which way does causation run, from taxation to income or vice versa? Why did not interest rates and bond yields reflect the increase in taxation? These figures include all kinds of different taxes and the question arises, "What is the influence upon income of each of the various kinds?" The period includes a high prosperity and a deep depression. What difference does this make? Let us begin by examining the views of the classical economists.

#### THE OMISSIONS OF THE CLASSICISTS

Although the classical economists<sup>8</sup> and those recent students who still adhere to their views follow a logical analysis which leads to consistent conclusions, their general theory is based on the assumption of continuous full employment. The validity of this concept rests on several underlying conditions of the classical system: first, complete mobility of the factors of production and the flexibility of prices; second, the absence of hoarding.<sup>9</sup> All money is spent either for consumers' goods or for producers' goods, and the classicists believe that the rate of interest determines the share of the national income which is consumed on the one hand, or saved and invested on the other. As a corollary of this condition, there could never be an insufficiency of investment opportunities, for they argued that income could not remain unspent. Either the fall in the rate of interest would open up new investment outlets for the existing savings, or this purchasing power would be spent for consumption.

The concept of continuous full employment, which the classicists hold in their general analysis, leads them to a serious omission in the field of taxation. Their conclusions concerning the results of the collection and dispersal of taxes are based entirely upon this belief.<sup>10</sup> This first omission by classicists in the past has contributed to the failure of students in the present to analyze taxation as an instrument of income creation.

The second omission of the classicists concerns the influence of the imposition of taxes upon the way in which the taxpayer divides his income between consumption and saving. The classicists advocate any measure which increases saving and investment, and oppose any which diminishes them. They realize that the only way to increase the output of goods and services is by an expansion of producers' goods, which requires saving. Of course, there is the possibility of a new invention or the discovery of a new process of production. These are developed, however, not as the result of government policy, but rather by unique individuals. To reduce saving and hence investment would, they hold, diminish the real income of the economy.<sup>11</sup>

The classicists oppose taxes which reduce the community's willingness to save and invest, or which are paid directly out of saving, on the ground that they contract real income. This argument, however, is true only in the case of full employment. Once they had committed the first omission, the second was inevitable. On the other hand, if they had seen the possibility of secular stagnation, they might well have realized that the payment of new taxes out of saving might raise income and employment.

The third omission of the classicists, which also follows from the first, is that they failed to foresee that the tax outlay might be used to expand private investment. They, of course, clearly recognized that subsidies and bounties could be used to expand certain industries. Nevertheless, such outlays were regarded as bringing about uneconomic use of resources. The national income was reduced because resources were not applied to their most productive employments. They neglected to see that tax outlay might be used in periods of unemployment to expand private investment and to raise the national income.

The failure of the classical analysis to recognize first that prolonged unemployment is possible, second that the payment of taxes out of saving may increase production, and third that the expenditure of the tax receipts may be used to encourage private investment and to expand production and employment created a gap in the theory of taxation which has prevailed until recently. It is apparent that these omissions react upon and reinforce one another, so that the possibility of using taxation as an instrument to create employment and income did not occur to the classicists.

#### PROLONGED DEPRESSION

If the possibility of prolonged depression were remote, this study would be an intellectual curiosity.<sup>12</sup> But prolonged depression, that is, a depressed period of more than two years, has occurred many times in the history of the United States. Following the end of the war of 1812, there was depression from 1815 to 1821. Beginning in 1837 there was depression until 1843, except for a temporary revival. The prosperity which followed the immediate readjustment period after the Civil War ended in 1873, and bad times lasted until 1878. Again in the 1890's there was prolonged depression. From 1890 to 1897, business was depressed except for a short-lived minor recovery.<sup>13</sup> Beginning in 1930, there was unemployment until the war orders put the idle capacity to work at the end of the decade, nor is the record confined to the United States. England, France, and Germany have passed through such periods. Certainly this phenomenon is not unusual, and we would be over-optimistic not to expect it to recur at some time in the future.

Prolonged depression exhibits features which are, in the main outline, characteristic of all the periods. The first of these characteristics is the general unemployment of labor. In most industries, men who are willing to work at the existing wage rate cannot find work, and submarginal or sub-subsistence wages are also signs of prolonged depression. In all the major depressions in the United States, the statistics show a migration of city jobless back to the farms. Such submarginal working conditions provide employment and help to maintain production

in general. Nevertheless, the living conditions of these workers may be worse than for those who live off the dole or work on relief. General unemployment is an important sign but not the only criterion. The second characteristic is the unemployment of material resources. Farms, factories, and furnaces stand unused and unproductive. The third characteristic is the decline in the rate of increase in production. During prolonged depression, output fails to increase at the rate at which it was growing, or falls absolutely. Not until the depression of the 1930's did production in the United States fall. Americans produced less in most of this decade than they had in the late 1920's. The fourth characteristic is the accumulation of idle bank reserves and unused loanable funds. Bankers have funds to lend when the sound borrowers appear. With idle reserves in the banking system an expansion of loans and deposits of several times the available reserves is possible. To be sure, there may be short-lived banking panics in which a growing liquidity preference on the part of non-banking businesses and individuals causes a tightness in the money markets. Bank reserves may be temporarily insufficient. In general, however, bankers are willing and able to lend, but sound and solvent borrowers are not available. The fifth characteristic is the lack of sufficient business initiative to employ these economic resources.<sup>14</sup> Profits are low, if not nonexistent. Entrepreneurs do not anticipate large enough profits from new investments to make use of them. As a result of their unwillingness or inability to make sufficient investment, the economy is stalled.

In *The General Theory of Employment, Interest, and Money*, Keynes characterizes prolonged unemployment as an underemployment equilibrium. He holds that continuous full employment is a unique special case, just one of many possible cases of equilibrium. The economy may be, perhaps normally is, in an underemployment equilibrium because there is no automatic self-regulating mechanism to raise employment and income.

Under the Keynesian analysis, there are only two phenomena which can lift the economy to full employment and then maintain it there, and these lie outside the normal functioning of the

economic process. They are, first, fiscal policy, and second, the discovery of new capital-using improvements. An underemployment equilibrium, or prolonged unemployment, is not a static equilibrium, and is consistent with continual technical progress.<sup>15</sup> New improvements of both a capital-saving and capital-using nature are permissible. Only the capital-using improvements must be neither so profitable nor so extensive as to expand investment sufficiently to reach full employment.

Hansen refers to prolonged unemployment as stagnation. He too believes, however, that the economy enjoys progress. Capital-saving improvements create new and better goods even in stagnation; there are also capital-using innovations which may revolutionize production and develop new industries. Nevertheless, these investment outlets are insufficient to make use of all the saving which the economy would set aside at a high income level.

Prolonged unemployment or stagnation, or an underemployment equilibrium, means that the economy is not producing the output of which it is capable. The technical knowledge, the man power, the material and natural resources, and the necessary loanable funds are all available. Entrepreneurship, enterprise, is lacking. The question is how to encourage the undertaking of new ventures and thereby to raise employment, production, and income both for the present and the future.

#### GENERAL STATEMENT OF INCOME CREATION BY MEANS OF TAXATION

Income creation by means of taxation operates through both divisions of national income, consumption and investment. The imposition of a tax causes taxpayers to consume a larger proportion of their disposable income (unless of course they were consuming 100 per cent of it before the tax). When the tax receipts are spent for consumption by the community as a whole, total consumption increases. When the receipts are spent to expand private investment, consumption may decline at the outset; but this is more than offset by the increase in investment. The national income begins to rise, and after only a few income periods consumption is larger than before the imposition of the

tax. The influence of higher taxes of all kinds upon consumption and investment, and of the spending of the receipts for social consumption or to expand private investment, is the subject for analysis throughout the rest of this book. It will be argued that, during unemployment, there is an appropriate taxing and spending program which is able to achieve full employment in all situations.



## CHAPTER II

### THE RESULTS OF TAXING AND SPENDING THE RECEIPTS

THE FIRST STEP towards understanding the creation of income by means of taxation is an analysis of the results of taxation and of the spending of the receipts. The results depend upon the source of tax payment and the impact of different taxes upon investment. These results, nevertheless, may be modified by the way in which the tax receipts are spent. This chapter presents an analysis of these aspects in general terms. It thus serves as a background for later chapters.<sup>1</sup>

#### THE SOURCES OF TAX PAYMENT

During prolonged unemployment, there are four sources from which taxes are paid. First, taxpayers may reduce their consumption by the amount of the tax. The poor, who devote all their income to consumption, may well have to reduce their consumption by the full amount of any tax. On the other hand, the taxpayer who normally saves a proportion of his income is not likely to pay the tax entirely out of income which otherwise would have gone into consumption.

The second source of tax payment is saving which would otherwise have been invested. Instead of reducing their consumption at all, the rich may prefer to meet the whole tax by investing less. While the rich may pay for the whole of their tax out of this source, the middle class is likely to reduce its consumption as well as its current investment. Obviously, this source is not available to the poor.

The first two sources of tax payment do not cause any income creation directly, setting aside the influence of the spending of the receipts and the influence of the tax upon investment. The income which would have been devoted to either consump-

tion or investment by the taxpayers is instead spent by the government. Nevertheless, the greater the extent to which taxes are paid out of saving and not out of consumption, the greater is the income creation; because, other things being unchanged, new funds are invested to replace the saving which is devoted to the payment of taxes. This aspect of the problem is explained at greater length in later pages 47-57.

The third source of tax payment is hoards of idle money accumulated in the past. During prolonged unemployment, many individuals and corporations build up their idle balances or hold unspent money. The imposition of a tax may cause the taxpayers to put a portion or all of this idle money to use. Instead of reducing current consumption and investment, the taxpayer may diminish his hoard. This newly spent purchasing power becomes a part of the income stream. It is spent and re-spent by future income recipients. Obviously, the tax is income creating to this extent. As long as the taxpayers draw on their hoards there is new income being created, but this painless process can continue only until the hoards are exhausted. Idle bank reserves which have been accumulated to satisfy the liquidity preference of the banks cannot be directly drawn upon. The banks could not pay their taxes with them, as they are a part of their assets and not a part of their income. Nonbankers have no right to them.

The fourth source of tax payment is the sale of property to investors who thus make use of their uninvested reserves. Taxpayers may be unwilling to reduce their current consumption or their current investment, and instead prefer to sell an old asset to a bank or to someone who buys it with new funds. Thus new money is injected into the economy. The tax is income creating.

The sale of securities and other property by taxpayers may cause their value to fall below the long-run price. The anticipated yield from these assets may be estimated no less accurately after the tax-spending program is introduced than before. Once the estimated future yield and the taxation program are known, the markets are able to calculate their long-run value. If the price of the assets falls below the long-run estimate, bankers will be willing to part with some of their liquid reserves

and invest. Also speculators and other nonbanking investors will find it profitable to borrow and buy the undervalued assets. Their depreciation below their long-run price can only be temporary.

The long-run price may or may not be influenced by the taxing and spending program. The special conditions of the kind of tax which is imposed and of the manner in which the receipts are spent influence the value of all assets in general and of some assets in particular. At present it is possible to say that only if the long-run price is unaltered by the taxing and spending program, investors should suffer no capital loss in a perfect market. However, many markets are not perfect; short-run expectations may diverge from the long run and dominate the markets; and the program of taxation may depress the long-run value of assets, in which case investors suffer a capital loss.

The two cases of income creation which are the result of the payment of taxes out of newly created purchasing power will receive only passing reference. Not that these cases are unimportant, but they are so simple they require no further analysis. They are one faucet from which is drawn the new means of payment necessary for income creation.

#### THE IMPACT OF TAXATION UPON INVESTMENT

The influence upon investment of the imposition of a tax depends upon the kind of tax which is levied. It is impossible to analyze here all of the many special taxes which are common today. We can discuss only three general kinds: consumption, property, and income taxes. The present discussion deals with the influences upon investment of each of these types in general. The multitude of special consumer taxes, such as tobacco, liquor, and gasoline taxes; sales taxes; and hidden taxes imposed on the consumer through higher prices; or the many kinds of property taxes on land, buildings, personal belongings, and securities, would require more space and effort than their analysis warrants for the present argument. This omission simplifies the discussion and in no way vitiates the conclusions.

The imposition of taxes upon certain consumers' goods, particular kinds of property, and special sources of income, while

exempting other consumers' goods, property, and other sources of income, causes a shift in investment.<sup>2</sup> The same result follows from uneven rates in taxes. Immediately after the tax, one field of investment is relatively less profitable. Over the adjustment period, investors will move saving into the more profitable lines and out of the taxed industries, until eventually the fall in the return, which is due to the introduction of new investment in the less heavily taxed field, equals the net return after taxes in the fields which are burdened. The gross return in the latter fields slowly rises during the adjustment period as investments are withdrawn. Investment may expand in one line and contract in the other; and the net effect, whether an expansion or a contraction, depends upon a variety of conditions of which the more important are the following. The higher the tax, the greater is the reduction in demand for the taxed commodity. The more elastic the demand for the taxed commodity, the greater is the reduction in demand which results from a given tax. And finally, the greater the proportion of capital which is employed in the taxed industries as compared to the nontaxed industries, the larger is the reduction in investment. On the other hand, the higher the profits in the nontaxed field and the more elastic the demand for its output and the more elastic the demand for capital in this field, the larger is the expansion in investment. New investment may be necessary to satisfy the increase in demand. A high tax on wooden buildings may make them so costly that only brick ones are erected. The increase in demand for bricks and mortar may result in so large an expansion of investment in these lines that it more than offsets the contraction in lumbering. There is income created when there is a net increase in investment as a result of the tax. Some of the unemployment resources of the economy are put to work.

#### GENERAL TAXATION ON CONSUMPTION

Although a general consumption tax is likely to cause some shifting of investment which results from changes in consumption patterns in the main, taxation which falls on consumption in general does not influence the supply price of investors. Savers do not invest unless the return is sufficient to

pay for the risks, the costs of bringing borrower and lender together, time preference (that is, the preference of the present consumption over future consumption), and liquidity preference (the preference of readily salable assets over those which are exchanged with difficulty). If savers were always willing to invest all they cared to save without regard to the return from the investment, there could be no prolonged unemployment. Economists have drawn a variety of supply curves for saving. The imposition of a general consumption tax does not alter the position of any of the curves. The schedule of the supply price of saving neither rises nor falls as a whole. Its slope is unchanged.

Nevertheless, the imposition of a consumption tax probably causes a reduction in saving. The same lump sum spent for consumption buys less after the tax than before. The same volume of saving requires more self-denial and the foregoing of more pleasures from the same income which is reduced by taxation. The logical conclusion follows that the consumption tax causes a shift of saving from investment to consumption.

This reduction of saving along the supply schedule, which is unaltered by the consumption tax, is made up by an inflow from hoards and bank reserves. Total investment need not decline because the intersection of the schedule of the marginal efficiency of capital with the supply curve is at the same point. There is income created when the receipts are spent because of the inflow of new funds.

### PROPERTY TAXES

In discussing the influence upon investment of the imposition of property taxes,<sup>3</sup> three kinds of property must be distinguished: consumers', non-durable producers', and durable producers' property, such as land. The case of property used for consumption has been analyzed already in the discussion of consumption taxes. Investors' supply price remains unaltered by a general tax on consumption.

In order to understand the impact of a general tax which is imposed upon both old and new equipment, the analysis must include the reactions in consumption and in investment. When

the tax is levied on old equipment which is in use, the tax must be paid in one of two ways: either out of income which otherwise would have been spent, or out of idle funds. When the tax is not paid out of new money, it must come from income which otherwise would have gone for consumption and investment. In this case the single enterpriser or corporation has less income available for the factors of production. Their incomes are reduced by the amount of the taxes and they have less income available for consumption. In this respect the general property tax on old equipment is not unlike the general consumption tax, for both diminish available income. The decline in available income raises the proportion which individuals spend for consumption. When the spending of the tax receipts is added to the increased proportion of individual consumption, the community is spending even a larger share of its income for consumption.

In addition to this reaction, there is the influence of the tax upon the purchase of new equipment. New equipment may be sold both for the replacement of obsolete and worn-out fixed and working capital and for the expansion of capacity. In the case of either replacement or new investment, a marginal productivity of the equipment must cover the tax. The price to the buyer is raised and less new equipment is bought. The decline in replacement reduces available income. Some replacement funds remain idle; likewise new investment declines. The higher cost which the tax inflicts reduces the profitable new uses to which the equipment can be put. The fall in total investment causes either income creation or destruction, depending upon the extent of the decline relative to the change in consumption including the tax outlay. The conditions in which the decline in investment is large are as follows: (a) the higher the tax, and (b) the more elastic the schedules of supply and demand, the greater is the reduction.

If the impact of the tax is to cause income destruction, the decline in investment must exceed the change in consumption including tax outlay. The conditions in which the change in consumption is likely to offset the fall in investment are as follows: (a) a large amount of old equipment relative to the cur-

rent production of new; (b) willingness of consumers to pay the tax out of saving; and (c) a high tax, providing it does not lead to the destruction of the property.

Although this observation cannot be proved until later, the income destruction that might occur under the conditions listed above can be more than offset by levying a different kind of tax and by spending the receipts to expand private investment. The same conditions which cause income destruction are favorable to an expansion in private investment when the receipts are spent as an inducement to investors. The income destruction described above can be avoided and turned into income creation.

An inclusive tax on equipment almost certainly falls more heavily upon some branches than on others, with the result that there is a shifting of investment between branches, as well as the above readjustment in total investment. A general tax on equipment also exempts land and possibly other very durable assets. Land is relatively more profitable; it will be substituted for the taxed equipment when the technique makes it possible. The extent of the movement depends upon the elasticity of substitution.

The influence of a general land tax<sup>4</sup> upon investment depends upon the kind of tax. Where the tax varies according to the value of the land, its marginal uses are unaltered. In agriculture, for example, the extensive and intensive margins of cultivation are unchanged. At these points the land as such has no value and requires no tax payment. Agricultural output remains as before the tax. The value of the land which is taxed falls as investors capitalize the tax. Land owners suffer a capital loss. Investors would not alter their supply price, and the supply schedule of saving would remain as before the tax. The tax impinges on land rent and not upon the return from capital equipment.

In contrast to the tax which varies with the value of the land, there is the flat tax per acre. Extensive land use is burdened relatively to intensive use, and the former would give way to the latter. Intensive use requires more investment per unit of land. The extensive land would become waste land, out-

put would decline, and more intensive cultivation of the fertile land would become profitable. The increase in investment may create more income than the withdrawal of the extensive marginal land destroys. Some of the conditions which favor income creation in this case are: a large reduction in output resulting from the removal of the extensive marginal land, a technique which requires large investment to expand output at the intensive margin; and a small destruction of income at the extensive margin. Although the flat land tax differs from the land tax which is based on value, both are alike in that neither alters the supply schedule of saving.

The process of income creation which results from a land tax of either type is in general the same as that arising from a general consumption tax. The supply schedule of investment is unaltered by the tax. The payment absorbs a portion of current saving. This gap opens up the opportunity of investing an equivalent amount of funds which were held as hoards or idle bank reserves. The increase in purchasing power is income creating.

### INCOME TAXES

The only remaining group of taxes is that of income taxes. They may be based upon the income of individuals and of corporations, and the tax rates may be proportional to the base, or progressively higher as the base increases. In the case of all such levies, they are paid out of funds which otherwise would have been consumed or saved. In addition, all of them raise the supply price of saving which the taxpayers are willing to invest.<sup>5</sup> That is, the taxpayers include the tax in the return which is necessary to induce them to invest their saving. In general, the impact of income taxes upon consumption, saving, and investment is similar to that of property taxes.<sup>6</sup> Let us, however, analyze separately in more detail personal and corporate income taxes.\*

\* The difficult problem of determining personal and corporate taxable income is not examined in this essay, first, because I have no contribution to add to those already suggested by Harold M. Groves in *Production, Jobs, and Taxes* and by the Committee on Postwar Tax Policy in *A Tax Program for a Solvent America*; and second, because there will still remain, after taxable income is correctly defined,



The personal income tax is clearly paid out of income which would be either consumed or saved. The level in income determines the share which is taken out of consumption or out of saving. The poor must pay the entire tax by reducing their consumption, while the very rich may pay their entire tax out of saving.

The impact of the personal income tax upon the taxpayers' willingness to invest out of income is more difficult to analyze.<sup>7</sup> The taxpayer includes the income tax in his supply price of saving. In the case of the proportional tax, the supply prices of all the different taxpayers are raised by the same multiple. A 50 per cent tax doubles the supply prices. In the case of the progressive personal income tax there is the same result within each income bracket because the same tax rate is applicable. Between taxable income brackets, however, there are different tax rates, with the result that taxpayers include in their supply price that tax rate which is applicable to their income. The higher the income, the higher the tax rate, and the greater is the increase in the supply price.<sup>8</sup>

The reaction in investment which is the result of raising the supply price of the taxpayers depends upon a variety of conditions: (a) the more elastic the demand schedule for investment, the greater is the reduction in investment which results from a given increase in the supply price; (b) the more elastic the supply schedule of taxpayers, the larger is the decline in investment; and (c) the greater the expansion in investment of banks and corporations which ignore the personal income tax, the more complete is the offset to the decline in the investment of taxpayers. In general, the more inelastic the schedules, the smaller is the reduction in investment and the more nearly is the reaction equal to that when the banks and corporations offset the decline in investment of taxpayers. On the supply side

---

the more fundamental problem of the impact of income taxation upon the national income. I do not imply that the correct definition of the taxable income does not influence the income creation which is the result of the tax. Clearly, for example, if capital gains are taxed while capital losses are not deductible, investment is discouraged and the income creation thereby diminished. Even after the correct definition is determined there remains the impact of the taxation upon income creation. This is the problem with which this essay is concerned.

of the question there are two limiting situations which include all others. When the supply schedule is horizontal over the relevant range, that is, infinitely elastic, and the tax raises this schedule, there is the largest possible reduction in investment. On the other hand, when banks and corporations completely offset any reduction in investment of taxpayers, there is no decline in investment. Clearly, the latter situation creates more income than the former.<sup>9</sup>

There are sufficient reasons for the belief that the conditions of an underemployment equilibrium conform more nearly to the situation which is the more income-creating of the two. These reasons fall into two groups, those which explain why banks and corporations may ignore the personal income tax during prolonged unemployment, and those which explain why the supply schedule of individual saving is less than infinitely elastic. Let us present the latter group now as it pertains to the personal income tax, leaving the former group to the discussion of the corporation income tax.\*

Two factors explain the slope of the supply schedule of individual saving out of income: (a) Every individual must give up satisfactions of a higher order the more he saves out of a given income. In order to be induced to do this he must be paid a higher supply price on additional increments in saving;<sup>10</sup> (b) The larger his income, the more willing he is to save. This means that the individual's supply schedule of saving declines and shifts to the right as his income rises. There is, of course, a wide variety of individual reactions toward saving. Nevertheless, the variations are likely to have a normal distribution. Within a large number of individuals there is certainly a typical mental attitude toward saving. Furthermore, the greater the inequality in income, the larger is the share of the total supply of saving which comes from the upper brackets. This causes the schedule to be at once lower and farther to the right, as well as becoming less elastic with the increase in saving.

This shape of the individual supply schedule of saving and investment out of income is significant for income creation by taxation. The personal income tax is paid to some extent out

\* See page 18.

of saving, and at the same time does not raise the supply schedule of saving and investment very much at the margin.<sup>11</sup> The less elastic the supply schedule, the smaller is the reduction in investment. The more progressive the personal income tax, the more it is paid out of saving and, providing the tax rates are not excessively high, the more the increase in the supply schedule may take place below the old equilibrium rate. The progressive personal income tax is thus a powerful means of income creation.\*

The analysis of the impact of the corporation income tax<sup>12</sup> upon income creation proceeds in the same direction as the personal income tax. The initial impact of the corporation income tax is to reduce the net income, if any, and hence the dividends of the stockholders, who are predominantly in the middle- and upper-income groups. Their available income is diminished. They reduce their consumption and their saving, but the latter more than the former. The corporation income tax is thus paid to some extent out of saving.

Of course, if the corporation earns no net income it pays no tax. It may, nevertheless, continue operations, at least in the short run. The net income tax does not fall upon maintenance and depreciation, and the corporation can continue operations. Of course, the investors may in the long run prefer to withdraw their capital as the equipment wears out, and the corporation will eventually be liquidated.

In the long run, the corporations which earn a taxable net income try to shift the tax burden from the stockholders. They may do so by shifting the tax forward to consumers by raising selling prices, and backward to producers of raw materials and to the other complementary agents of production by paying them less. No matter how the burden is shifted, whether to consumers in higher prices or to producers in lower incomes, their available income is reduced. This means that their consumption and their saving decline. In every instance, therefore, the corporation net income tax is paid to some extent out of saving.

\* For diagrammatic analysis see appendix to this chapter.

It is impossible to state in general how much of such a tax is paid out of saving because of the multitude of possible cases. When the corporation is a monopoly<sup>13</sup> and owned by the rich, a tax on its net income is likely to be paid predominantly out of saving. On the other hand, if the tax is shifted back to the workers by a wage reduction it falls predominantly upon consumption. There is a wide variety of cases between these limits which it is not necessary to discuss because the principle is clear. It is certain that the impact of the corporation net income tax upon consumption and saving differs from that of the personal income tax when the rates are the same. There is a typical reaction in the case of individuals which is lacking for the corporation. Hence the analysis in this essay stresses the personal income tax.

The impact of the corporation net income tax upon investment is, on the other hand, the same as that of the personal income tax. In placing new investment, the directors of the corporations include the tax in their supply price. The expected return must be sufficient to yield net after the tax the normal supply price which covers the risks and costs. When the same tax rates are applicable in the case of the corporation net income tax as for the personal income tax, the reaction upon the supply price of saving and investment is the same for each.

There is this difference, however, between these two cases. The supply schedule of individual saving has a positive slope.<sup>14</sup> It is not possible to state with certainty the slope of the schedule of corporate net saving, which excludes maintenance and depreciation allowances. In the long run it would seem reasonable that the corporate schedule would conform to that of the stockholders, as the corporation would be reinvesting undistributed earnings. In the short run, however, the directors may be more willing than the stockholders to save the profits of the corporation. The schedule in this instance is more elastic. The later analysis of income creation avoids this uncertainty by assuming the most unfavorable reaction. That is, the supply schedule of saving is assumed to be horizontal. This includes corporate and individual saving, and the tax raises the schedule

by the full amount throughout. This causes the largest possible reduction in investment, and if the income tax is income creating in this situation it must be even more so in all others.

Although at this juncture it is not possible to prove that either the personal or the corporate income tax is income creating when the result is a decline in investment, we must outline the answer. When the schedule of the marginal efficiency of capital has an elasticity of unity or less, the decline in investment which is the result of the increase in the supply price of saving is more than offset by the change in total consumption. In this instance, the tax receipts are devoted to social consumption, and total consumption increases because the tax is paid to some extent out of saving. The reduction in individual saving and investment out of current income is offset to some extent by the investment of idle funds. Although investment declines as a result of the increased supply price of saving, it is more than offset by an increase in consumption. There is income creation. When the schedule of the marginal efficiency of capital has an elasticity greater than unity, the reduction in investment is larger than in the case of unity. This deflationary reaction may, nevertheless, be more than offset by spending the tax receipts to encourage and expand private investment. There is income creation in this instance because the tax is paid to some extent out of saving and because private investment is encouraged. In this instance, likewise, the reduction in current individual saving is offset by the investing of idle funds.

The power of income taxation to create income is clearly greatest when the impact of the tax causes no decline in investment. This is the result when a personal progressive income tax falls upon undistributed corporate earnings<sup>15</sup> and the corporations pay no income tax directly. The individual could not evade his income tax by accumulating as undistributed profits the earnings of the corporations which he controls. Such hoarding would be deflationary. This possibility is avoided when such undistributed profits are a part of the taxable income of the owners. More important for income creation is the likelihood that the corporations ignore the impact of the personal income tax.<sup>16</sup>

There are several reasons why, if the corporations pay no income tax directly, their investment plans may disregard the results of the tax upon the incomes of the owners. First, the managers and directors measure their success in terms of the net income of the corporation. The larger this net income, the greater their security and their claim for a salary. It is to their advantage, therefore, to invest their accumulated saving up to the point where the marginal return just covers the normal items of supply price, excluding the tax. Second, the net income of corporations depends upon other factors in addition to the earnings from invested saving. The operating expenses and changes in demand and in costs also influence net income. Hence the income tax which the owners pay is not directly related only to the investment of available saving. Third, in the case of the progressive personal income tax the directors may not know the taxable income brackets of the many owners. This is particularly true of large corporations and of those whose stocks are widely held. The managers and directors cannot know the result of their investment policy upon the taxable income and upon the taxes of the owners. The corporate objective is to make as large a net income before taxes as possible. When the corporations and banks ignore the impact of their investment policy upon the taxable income of the owners, any decline in the supply of individual saving out of current income is completely offset by an equal increase in the saving of corporations and banks during prolonged unemployment. There is no reduction in investment as a result of the personal income tax in this instance. There is income creation because the tax is paid to some extent out of saving.

In general, investors oppose taxation. They are apt to incur a direct loss in capital value as well as a reduction in disposable income. The initial impact of new taxation is likely to be magnified beyond its actual results at the outset of income creation. While the new legislation is under discussion and before the law goes into operation, investors in general may anticipate losses. If all investors expect losses, actual loss is magnified, since through fear the investors may hoard, liquidate assets, call loans, and set in motion income destruction. This short-run re-

action aggravates the conditions of prolonged unemployment which the policy is trying to overcome. This deflation can be only temporary in the absence of outside shocks for the following reasons: the economy is highly liquid; the uncertainty of the legislation and the impact of the taxes must pass with time; and finally, as the income creation which results from the taxation gradually mounts, taxpayers' incomes increase, and the initial impact diminishes. In certain cases, taxpayers' disposable income is larger after the tax and spending program has been in operation than before.

#### EXPENDITURE OF RECEIPTS TO EXPAND PRIVATE INVESTMENT

While one side of the method of income creation concerns the influence of the imposition of the new tax or taxes, the other side concerns the spending of the receipts.<sup>17</sup> Both are integral parts of the policy and must be coördinated to achieve the maximum income creation. Not only is it necessary to select the tax which reduces consumption and raises the supply price of investors the least, but also to direct the spending of the receipts to cause the greatest expansion in private outlay, for either consumption or investment. The spending of the tax receipts, as well as the impact of the tax itself, reacts upon consumption and investment. When the receipts raise the consumption of the economy as a whole, an increase in investment may follow. When they cause private investment to expand, the recipients of this income are able to consume more in later periods. Under certain conditions, one method of spending creates more income than the other.

The tax is paid to some extent out of saving when it falls on the middle- and upper-income groups. When the receipts are then spent for consumption which may be socially enjoyed or enjoyed by an underprivileged group, total consumption increases.<sup>18</sup> This increase requires some investment, if only in inventories. When the policy is expected to be permanent, the increase in consumption is also permanent, barring any outside shocks. The expansion in consumption being permanent, inventories increase because of the larger volume of business. They are likely to be a proportion of sales which, although varying

through time, remains approximately constant. The new income created by the rise in inventories raises consumption still more. When the growth in consumption is large enough and the productive capacity of existing firms is at its height, investment in equipment may follow.

The additional investment resulting from the new consumption is called induced investment, in contrast to spontaneous or dynamic investment, which is a function of techniques of production, changes in the interest rate, or discoveries of new sources of raw materials. The conditions which govern induced investment are given in the acceleration principle.<sup>19</sup> These conditions are: first, the confidence with which investors project the increase in demand into the future; second, the extent of unused capacity in the industries in question relative to the increase in demand; third, the extent to which substitute means of production are available in place of new investment; fourth, the elasticity of supply, or the means of production for the new investment; and fifth, the durability of the equipment in question. Once the policy of taxation and spending for consumption is under way, there is no inherent reason for change, so that investors may anticipate that the increase in demand will be constant and not likely to collapse in the future. During prolonged unemployment there are many unused means of production. If investors decide to expand their activity, these resources are available and their shift into new jobs is likely to require less of a price rise than at any other position of increasing income. During prolonged unemployment, not all industries exhibit the same extent of unused capacity. There are new industries which may be operating nearly at full capacity. New consumers' goods may be taking the place of the old, and such producers may be at a high level of output. Some industries which are highly competitive lower their selling price and maintain output instead of reducing it. The industries which display the largest excess capacity are likely to be in the investment field, such as the steel, electric-power, and machine-tool industries. During even prolonged unemployment, however, the increase in consumer demand is likely to impinge on certain firms or industries which are induced to expand their investment as a result.

There is a serious weakness in this method of stimulating in-



vestment and income creation. The acceleration principle states that induced investment continues to expand only as long as the rate of growth in consumption increases. This means that even though consumption is growing, induced investment begins to fall when the rate of growth in consumption slackens. The decline in induced investment sets the acceleration principle in motion in the downward direction. Since it is impossible for consumption to grow at an indefinitely increasing rate, induced investment must decline and cause a reduction in income, unless dynamic investment expands enough to offset the fall in induced investment. Barring any such offset, the income destruction is not likely to proceed to the low level which existed before the policy of taxing and spending was started. A larger proportion of the community's income is spent for consumption after the program is initiated. Although induced investment becomes zero and disappears, there is still some dynamic investment. Depending upon the nature and the impact of the tax, investment, that is dynamic investment, is the same as it was before the tax, or less. If the same, there is income creation, and the decline of induced investment to zero does not wipe out the income increment. If dynamic investment is less, there is an offset to be counted.

The acceleration principle has almost always presented the increase in induced investment as a function of the change in consumption. The principle need not, however, be so limited. An increase in demand for particular capital goods may induce additional investment to enlarge the capacity to produce them. When the receipts are spent not for consumption but for investment in public works, or socially desirable projects which may fall outside this category, the sudden increase in demand for the particular equipment may require an increased capacity. For example, when a country's foreign trade is carried in foreign ships, a policy which entails the purchase out of tax receipts of domestically made ships may cause private ship-builders to expand their facilities.

Even though the acceleration principle may be adapted to explain an increase of investment in one field which is due to an increase in another, it is subject in this case to the same limiting conditions and possesses the same inherent weakness.

Induced investment expands only as long as the tax outlay is growing. Since receipts cannot increase indefinitely, tax outlay must increase less rapidly and cause induced investment to fall. Income creation diminishes, or income destruction begins.

The government may give the receipts to private producers as a subsidy,<sup>20</sup> on the condition that they expand output. The subsidy may take two forms: first, a payment per unit of output; and second, a payment per unit of investment. The first enlarges output directly and the second indirectly. But both depend upon the same general conditions, and both operate in the same manner, so that the discussion deals with them simultaneously and they are differentiated only when the argument requires it.

The subsidy lowers the cost of production and permits a reduction of price. The increase in demand creates income. The new output may involve additional investment if the excess capacity is slight in relation to the increased demand. This increase in investment, as well as that directly due to the subsidy, creates income and expands demand according to the acceleration principle. The subsidy expands investment, which raises the level in income and increases the tax receipts. This permits a larger subsidy. Investment and income receive another upward thrust. This cumulative process operates through three factors: first, the income elasticity of the receipts; second, the income elasticity in the demand for the subsidized product; and third, the responsiveness in investment.

Once income stops rising, as it may do for one of half a dozen reasons,\* receipts and the subsidy fail to increase. No additional investment in equipment is necessary as long as the new equipment lasts. In fact, investment in durable equipment declines, which reduces income, tax receipts, and the subsidy. Income destruction takes place unless there is new tax legislation to raise receipts. Income can be maintained, but only at the price of a continually growing subsidy.

\* (1) At full capacity, costs rise faster than selling prices. (2) The income elasticity of the tax receipts is low. (3) Investment is not highly responsive to the subsidy. (4) The initial tax is low, receipts and subsidy small, and income creation slight. (5) There is a limit to the expansion of bank credit. (6) The increasing inefficiency, as less productive factors are employed, raises costs and lowers the effectiveness of a subsidy.

When the subsidy causes an expansion in plant capacity, the income creation is many times larger than the current subsidy, although the expansion in income is only temporary. This is particularly true where the subsidy is directly for investment. The great expansion in income occurs during the increase in investment, when the current subsidy payment is not a large sum. The income which has been created begins to diminish as soon as investment declines. However, the subsidy must continue according to the initial agreement. In fact, such payments may continue long after the expansion in income due to the temporary increase in investment has disappeared.

In spite of this temporary income creation, there is a net addition which may result from two conditions. First, the tax is likely to be paid to some extent out of saving. Second, the subsidy lowers the cost of production and causes an increase in consumption, which requires more working capital to be turned over continuously. Since more goods are produced and more income is consumed, there must have been a permanent increase in income.

In addition to the weakness of temporarily raising income above its permanent level, the method of income creation by means of subsidy exhibits a political weakness. The subsidy benefits directly relatively few producers. When income begins to decline (and perhaps even before it does so) strong pressure groups will exert their influence upon the policy authority to grant them a subsidy. Economic and social criteria for choosing the industry to be favored with a subsidy may yield to political partisanship. Uneconomic producers, or perhaps an uneconomic industry, might thus be maintained. These two weaknesses, one economic, the other political, interact. Since the initial income creation is only temporary, the policy authority must expand the subsidy into new fields to prevent a fall in income. Political pressure may force the subsidization of an uneconomic industry or force the introduction of the policy too soon, thus aggravating the rise and subsequent fall in income. Political pressure may cause the renewal of a subsidy agreement, even though the method of production has become obsolete or inefficient. The tariff is an example of how difficult it is to withdraw protection

once it has been given; subsidies to the merchant marine are another example.

In addition to the methods of expanding investment by means of the acceleration principle and subsidies, there is another form of government spending which achieves a lasting increase in income. The government can loan or invest the tax receipts without charge to private investors, on the condition that they make an investment also.<sup>21</sup> The government does not have to charge interest, and the earnings from its investment accrue to the private borrowers. This increases their return, which is composed of the earnings on their own investment plus those on the government's sum. The policy authority can fix the proportion which the government's share bears to the private investment. The larger the tax receipts, which are loaned or invested, are in relation to the private increment, the greater is the return to the private investors. By setting this proportion high enough, investors make a profit by borrowing from the banks to acquire the necessary sum with which to demand a government loan or investment. The expansion in bank credit creates income and increases receipts. The government can make additional loans or investments. Private borrowers' income may expand further, although there is a limit to this cumulative process.

From this brief description of the government's lending or investing the receipts, it is apparent that the income creation depends upon the government's not charging interest and making the return available to private investors.<sup>22</sup> There are several reasons why the government need not and should not charge interest or any return for a loan or an investment during prolonged unemployment. First, the government has no time preference. Its life is perpetual and it must consider the future well-being of the society no less than the present. Since it possesses the power to tax, it need not charge interest in the present to accumulate receipts out of which to meet future expenses. Furthermore, the party in power always desires to perpetuate its position. This attitude should force it to charge no interest. More income is thus created and the party's control is strengthened.

Second, the government has no liquidity preference. It can

borrow or tax at any time if its current expenses exceed its income. It does not have to hold liquid assets or hoards to meet unforeseen emergencies, for it can raise the necessary funds at the time by borrowing or taxation.

The government may accumulate reserve funds to meet unemployment, old age, and sickness, and perhaps even war. The government cannot hoard these reserves without serious deflationary results, and how they are to be handled raises intricate monetary problems. In no case does the government require a liquidity premium in order not to hoard. The serious consequences of such a policy are themselves sufficient inducement to prevent the government from hoarding.

Third, the government need not and should not charge the private borrowers with the administrative cost of the lending. The government can meet the operating costs of investing or lending the receipts out of the general revenue. This tax outlay would go in large part into consumption, since the salaries which administrators and their staff earn are low. The government should not charge such costs to the private borrowers, because the entire economy benefits from the rise in income. Since the benefits are widespread, the costs should be also. The income creation would be diminished if the costs were charged to the borrowers, because this would reduce the profitable new investment.

Fourth, there may be some unavoidable risk of loss; but the government ought not to charge this to private borrowers. Insofar as it is possible for prudent business practice, the government should be protected against loss. The administrative authority may require the advance of suitable assets, mortgages, or liens to property, and receive other guarantees of repayment. All risk of loss cannot be avoided, and the government would defeat the purpose of income creation by requiring 100 per cent collateral of the highest grade liquid assets, for many if not most borrowers would be barred by these provisions. The protective measures must be liberal in order to encourage borrowers. Any loss can be made up out of tax receipts in the future. Careful administration might make allowance for a small per cent of losses in setting the tax rate at the outset. Additional funds would be available to replace the losses and con-

tinue the program. To charge all the risk of loss to the borrowers defeats the income creation by raising investors' supply price.<sup>23</sup>

Fifth, during prolonged unemployment there is a real loss to the economy from inaction, and this loss exceeds by many times the lack of interest from the invested receipts. Total output is below what is perfectly possible by perhaps 10 to 20 per cent. This is a current loss as long as prolonged unemployment lasts; and it is gone forever. An annual loss of 10 per cent of total output aggregates 100 per cent in ten years. There must be added to this the loss of skill, of the will to work, and of physical health and energy of the unemployed in particular. Such social waste is avoided by incurring the almost insignificant loss of interest from the invested receipts.<sup>24</sup>

Society benefits in yet another way. The government's lending or investing the receipts without charge makes it possible for private enterprise to remove certain social costs. Slum clearance and reforestation are examples in point. Slums inflict upon society the costs of crime, illness, and ignorance, and their elimination would lessen these wastes. Conservation of forest resources is too costly for private producers, and hence the natural resources of lumber, land, and water are squandered in the present, and destroyed for the future. Much of this social waste would be avoided, for private enterprise would find that self-interest dictated conservation.

When the government does not charge interest when loaning or investing the receipts, this return must be made available to private investors to induce them to expand borrowings. It is not enough to offer to lend receipts at zero interest; for bank credit upon which interest is charged would glut the market, while there would be an excess demand to borrow receipts. Or, if the government invests the receipts, it must thereby open up opportunities for private investors. In following the one principle of expanding private investment, the policy authority may go in two directions. First, the loan of the receipts is made conditional upon some additional private borrowing, and second, the investment is made in conjunction with the demands of private investors.

In order to carry out this principle, new financial institutions

may be needed, or old ones changed. It is not my intention to present an administrative schema which is inflexible and all inclusive. It is rather to outline an administrative schema as a working suggestion, just one of many possible alternatives. The following may arrest the criticism that the principle is theoretically sound but practically impossible.

There might be an independent government agency like the Reconstruction Finance Corporation or a Federal Reserve Bank to administer the loaning of the tax receipts. It would make long and short loans to all sound borrowers who had made the necessary secondary borrowing from the banks. The agency would have the duty of supervising the carrying out of the borrowing agreement and of seeing that the bank loans were not immediately renewed as a means of borrowing additional tax receipts. The problems of the kind and amount of collateral to be required against a loan, and of the method of repayment, would fall under its jurisdiction.

In placing the investment of the receipts, the policy authority, which may be the same as the agency which administers the lending operations, must follow the principle of encouraging private investment. Perhaps this principle is best explained by some examples. If the government should purchase slum areas and demolish the tenements, the land could be leased without cost to private enterprise to construct safe, healthy, and inexpensive dwellings. The investment of the receipts in the land and old buildings reduces the capital which is required to construct a new dwelling. Because the government leases the land without charge to the private investor, his costs are lowered in two respects: first, the necessary capital is less, and second, no interest is charged on the share of the total investment which the government contributes. Private enterprise would find it profitable to invest in the new building up to the point where the expected return would cover the costs. Current rentals would be expected to meet current taxes on the dwelling, interest and insurance on the private investment, and to pay a contractor's profit. There is omitted from the calculations a portion of the interest which normally is an item of cost, as the purchase price of the land is expected to yield a return.<sup>25</sup>

Another example might be rural electrification. Many areas which are far from the source of production of electricity have neither electric lights nor many conveniences of the home because electricity is too costly. If the government shared in the investment and charged no interest, the cost of electrification of these rural areas would be reduced. A plan of forest conservation and of reforestation may be another example. The government might purchase the forest area and lease the lumbering privileges to private companies without charge, in return for conservation practices and reforestation. The private investment in the land and timber must pay a return, which comes from the lumbering operations. The price of lumber is so low that wasteful and destructive methods are followed because they are less costly. By eliminating the interest charge on the land and timber, as would be the result of the government's purchasing and leasing the property without charge, the private companies can afford to follow methods which conserve the forest resources. Many other examples are possible, but space does not permit their description.

In determining the ratio which tax outlay bears to private investment, the policy authority must take into consideration the influence of the tax upon the supply price of investors. If the tax does not raise their supply price, any ratio gives the investors a profit at the outset. For example, one unit of receipts to two of private investment increases the return to the private investors by 50 per cent when the total investment is unchanged and the marginal productivity has not fallen. The demand for the loan of tax receipts is likely to increase because investors receive a profit, and the banking system can expand credit at the existing supply price. The growth in total investment reduces the marginal productivity and hence the return to private investors. It is profitable for them to increase total investment until their return has fallen to their supply price. Private investors do not go beyond this point. The growth in total investment sets income creation in motion.

When the tax raises the supply price of private investors, the policy authority must fix the ratio high enough so that private investors receive at least their supply price. If the ratio is so low that their return does not cover their supply price



including the tax, total investment shrinks until the marginal productivity has risen sufficiently to bring the necessary return. By increasing the ratio, the policy authority can raise the return. Investors may be given a profit which is a return in excess of their supply price. Their demand for receipts increases, and with it their contribution, hence, total investment expands. Again the expansion continues, until the return to private investors has fallen to their supply price including the tax, because of the decline in the marginal productivity of capital. Once more the increase in total investment sets income creation in motion.

The three methods of spending the receipts to expand private investment may be understood more easily after a brief comparison. The principle of acceleration operates in the case of all three; when the receipts are spent for consumption, used as a subsidy, and loaned and invested without charge. Whenever total consumption rises, the acceleration principle begins to operate, although it is subject to certain necessary conditions. In later periods, total consumption increases when the receipts are used as a subsidy or loaned and invested without interest.

In the case of the acceleration principle and the subsidy, the income creation which results from a given tax is likely to rise and then decline, although not back to the starting level. The former is a function of the rate of change in consumption. The latter causes income to rise and then fall because a given subsidy expands investment which later declines. If the influence of the acceleration principle is ignored, the method of lending and investing the receipts raises income to a higher level at which it is constant as long as the new investment opportunities last. In this case, a given tax expands investment until the return to private investors equals their supply price, at which position investment is constant. This method of income creation is the slowest of the three, although the income created is more stable and remains longer at a high level. The income creation rises and then levels off. Then it is constant as long as investment is constant.

There is the possibility of the policy authority desiring to check the income creation once the program is under way. Out-

side dynamic considerations may make the income creation unnecessary and unwise, and the policy authority may wish to stop its program. In the case of the acceleration principle, the income creation may be checked or reversed by hoarding the receipts. To hold them idle, however, may not be easy, for many persons may be dependent upon the government payments for their subsistence. A political pressure group may develop and may oppose a reduction or termination of the spending. The subsidy also should not be stopped during the life of the agreement. Once the government and private producers have agreed on the subsidy and the terms, the government cannot break the agreement. Even at the end of the contract, political pressure may force the continuation of the subsidy. The method of lending and investing the receipts does not have this political weakness. Under this method, the program can stop without injuring those who have already benefited from it. Once a borrower of tax receipts has acquired his loan, the benefits of it to him cannot be taken away. There may be unsatisfied new borrowers whose requests are rejected because of the termination of the program. This group is likely to be heterogeneous and otherwise disunited so that its political power will be slight. Furthermore, the dynamic conditions are likely to create new investment opportunities for the unsatisfied fringe. The method of lending and investing receipts without charge permits the program of income creation to be turned on or off at will, while the other two methods are less flexible.

### SOME EXAMPLES

In the previous section the principle of expanding private investment through the government's spending the tax receipts has been set forth. The question which naturally arises to one who almost instinctively opposes government interference in business is, "How unique is this principle?" In the United States, which has advocated private enterprise throughout its history, government has extended aid to business and stimulated investment in many ways. In the development of the railroads some states subscribed capital, some gave the right of way, and others extended special privileges. The federal gov-

ernment made many of the Western railroad companies grants of large tracts of land as inducements for their construction.<sup>26</sup> The government has facilitated ocean transportation by maintaining harbors, channels, and a system of lighthouses and markers which are supplemented by the Coast Guard to protect shipping. More recently certain companies have been given financial aid by granting them mail contracts, which pay them more than the cost of handling the mail. These are hidden subsidies. Many businesses have received government encouragement and protection through the tariff. Agriculture was long stimulated by a liberal homestead policy. Since the passing of the frontier, this policy has been supplemented by easy-credit schemes, government-operated experiment stations, and a system of farm-to-market roads. More recently government has paid direct subsidies to farmers to encourage them to follow certain agricultural methods. In the development of the public utilities, municipal and local government gave the private companies valuable franchises in return for political favors. Electric light and power companies, the telephone, gas, and water companies, use the public highway without charge. The development of the automobile and of a system of highways mutually stimulated one another.<sup>27</sup> Air transportation has been helped through government-owned airports, government weather reporting, and a system of beacons for the planes to follow.

Government irrigation projects are another illustration. The government invests large sums in irrigation dams, canals, ditches, and roads, which make the land more productive and suitable for more intensive cultivation. Farmers invest in the preparation of the land, in buildings, and in equipment. The development in new rural communities stimulates private investment in retailing and wholesaling. In addition, private investment in public services is stimulated. There is finally the municipal investment in public buildings. These opportunities for profitable private investment are made possible by the government's development of irrigation projects.

In the 1930's the federal government encouraged private investment in a different way. It assumed some of the risk of

long-term investment, thereby diminishing the cost to private investors. The Reconstruction Finance Corporation, the Federal Farm Banks, and the Home Owners' Loan Corporation are characteristic of the many agencies which have been developed for this purpose.<sup>28</sup> During the war, the federal government guaranteed many loans made by the banks to private industry to expand the output for war. Similar plans were made for reconversion to peacetime production.<sup>29</sup>

The Tennessee Valley Authority is typical of another approach to the government's encouragement of private investment. The project was not sufficiently profitable for private enterprise to carry out the multiple development of the region. The government's investment is not in place of, but in addition to, this kind of private investment. The multiple development of the region encourages private investment and enterprise in many subsidiary and related industries, in and outside of the region.

From this brief sketch, it is apparent that the government has helped private investment in many ways. The present suggestion, that the government lend and invest tax receipts without cost to encourage private investment, conforms to these many practices and is not a break with the American tradition. In fact it is hardly novel in any respect.

## APPENDIX

### THE IMPACT OF THE PERSONAL INCOME TAX UPON INDIVIDUAL SAVING AND INVESTMENT OUT OF INCOME

Figures 1 and 2 indicate the reduction in individual saving and investment which is the result of a proportional personal income tax.<sup>30</sup> Let  $CC'$  be the schedule of the marginal efficiency of capital. Let  $SS'$  be the composite supply schedule of individual saving and investment. For convenience, this schedule is composed of only two groups of investors, the rich, and the middle-income groups. The supply schedule of the rich,  $RR'$ , is steep, as it is inelastic. That of the middle-income group,  $MM'$ , is more elastic. The composite supply schedule,  $SS'$ , is more elastic than either component,  $RR'$  or  $MM'$ . Let a proportional tax of 50 per cent be imposed. This rate doubles the supply price of each group of investors for all units of investment.

The lines  $RT$  and  $HT'$  in Figure 1, and  $UT''$  in Figure 2 indicate the increase in the supply schedule which a 50 per cent tax imposes. In each case, the new schedule is less elastic than the original. The tax raises the supply price not by a constant sum but by a constant multiple. With a 50 per cent tax each supply price is doubled.

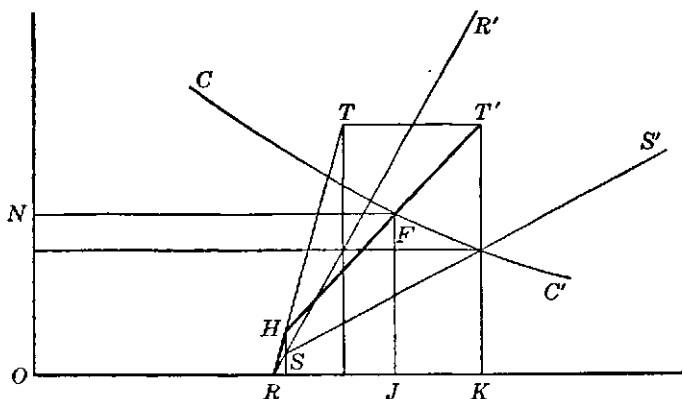


FIG. 1. The Composite Schedules

The intersection of  $HT'$  (which is the composite supply price including the tax) with  $CC'$  determines the equilibrium yield on new investment which covers the normal supply price and the tax. Individual investment declines  $KJ$ . This reduction is divided between the two groups as follows. In each case, Figure 1 or 2, the yield must

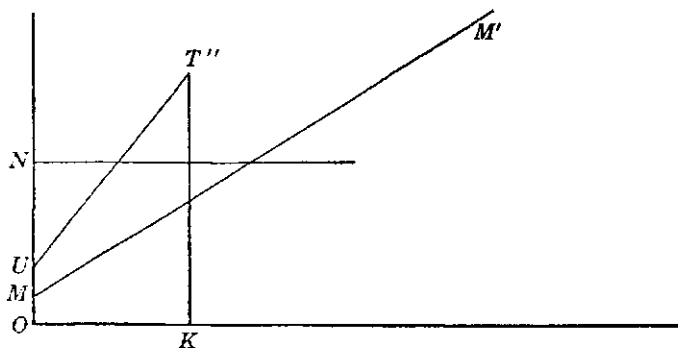


FIG. 2. The Schedule of the Middle-Income Group

be  $ON$ . The points where the horizontal line through  $N$  intersects the new supply schedules,  $RHT$  and  $HT'$ , indicate the new investment of each group. The reduction in investment of each is easily seen.  $RT$  must be less elastic than  $UT''$  because  $RR'$  is less elastic than  $MM'$ . A 50 per cent tax reduces the investment of the middle-income group by a larger proportion than in the case of the rich.

This conclusion may be made general for all proportional taxes. Every tax rate raises the supply prices of both groups by a constant multiple. Now since the supply schedule for the rich is less elastic than that of the middle-income groups, the new schedule which includes the tax is less elastic in the case of the former than in the case of the latter. Any proportional tax reduces the investment of the middle-income group by a larger proportion than in the case of the rich.

The impact of the progressive personal income tax upon investment is also apparent from this analysis. A lower tax rate on the middle-income group would significantly reduce the slope of the composite supply schedule,  $RHT'$ , at its intersection with the schedule of the marginal efficiency of capital. On the other hand, a higher tax rate on the rich would not greatly increase the slope of their supply schedule from the existing position,  $RT$ , which is already nearly perpendicular. Such a shift of  $RT$  toward the perpendicular would not greatly increase the slope of the composite supply schedule,  $RHT'$ . We may conclude in general that the greater the difference in the tax rates of the various income groups, the smaller is the increase in the composite supply schedule of saving at the margin; and the lower and the less elastic the schedule of the rich in comparison to the other income groups, the higher the tax rates on the upper income groups may be without causing a large reduction in investment. We may also conclude that the progressive personal income tax reduces investment less than the proportional personal income tax when this tax rate is equal to the highest of the progressive rates.

## CHAPTER III

### INCOME CREATION BY MEANS OF TAXATION

AFTER THE GENERAL ANALYSIS of the previous chapter, a more precise formulation of income creation by means of taxation is desirable. By setting forth the necessary assumptions and by indicating the reactions in particular variables it is possible to express income creation in precise terms. In this chapter, however, only certain cases of income creation can thus be formulated, leaving the remainder for subsequent chapters.

It is impossible to set forth at one and the same time the influence of the imposition of the tax and of the spending of the receipts; but since income creation by means of taxation operates simultaneously in these directions, the variables in the process of income creation must be put in motion all together, although they can be explained only one at a time. The analysis is macroscopic in that it deals with the whole economy in motion, microscopic in that it focuses attention on certain variables which are the mainsprings of the change, and telescopic in that it examines the process through time.

#### THE ASSUMPTIONS

The following presentation rests upon certain assumptions, some of which are essential to the argument, and some of which are introduced for convenience.<sup>1</sup> All of them are qualified in later chapters as the analysis progresses to more complicated situations. All are consistent either with the conditions of prolonged unemployment or with conditions which may arise as the economy moves towards full employment. The following are the assumptions.

First, the supply of the factors of production is unlimited so that their prices are constant and that no bottlenecks in production develop as income, output, and employment rise. During

prolonged unemployment this situation may well exist, at least during the early stages of recovery to a higher income level.

Second, the supply of bank credit is absolutely elastic at the normal supply price which includes the tax. That is, the supply price of investors (among whom are the banks) rises to include the tax. This assumption is more conservative than is perhaps warranted. During prolonged unemployment the banks may be willing to expand credit at the existing supply price, particularly when the impact of the tax does not fall upon them. It is a conservative assumption because the income creation is thereby restricted—and less than it otherwise would be.

Third, the supply schedule of investment is horizontal, and the supply price of investors is a direct function of the tax. Investors include the tax as an item which the return must cover. This assumption is also conservative because the schedule is likely to lie below the equilibrium rate, and because not all taxes fall upon investors and act as an offset to income creation.

Fourth, the tax which is imposed as an instrument of income creation is a proportional income tax. Methodology indicates this assumption, for this tax is the simplest to include in formulas and its impact is definite. This too is a conservative assumption, because the progressive income tax raises the supply schedule of investors less than does the proportional tax so long as the highest rate of the former is equal to the proportional rate.

Fifth, the schedule of the marginal efficiency of capital\* has an elasticity of unity over the relevant range. Of course, in fact the schedule may be more or less elastic. The assumption of unit elasticity has been made purely for methodology. Under these assumptions, a given change in the supply price causes an equal and opposite change in investment. In this way the result of the tax upon investment is known. The tax causes a definite change in the supply price of investors and this change

\* In this schedule, net investment is a function of the rate of interest and is spontaneous or dynamic investment. That is, it depends upon innovations, capital-using techniques, and opening-up of new markets. Excluded from the schedule is induced investment, which depends upon the acceleration principle. For further analysis, see Chapter IV, Appendix B.



reacts in a known manner upon investment. The case of unit elasticity in the schedule of the marginal efficiency of capital is unique for the principle of income creation by means of taxation. Setting the operation of the acceleration principle aside, there is no difference as to the income created, whether the receipts are spent for consumption or loaned and invested to expand private investment. This aspect, however, together with the influence of a greater and lesser elasticity in the schedule of the marginal efficiency of capital, must wait until the next chapter.

Sixth, the influence of the acceleration principle upon income creation is omitted because this process is unstable. The income which is created is followed by income destruction. The extent of this variation depends upon many conditions, but in all they rest on a growth in demand. This increase is due to the prolonged rise in income, and it is this fundamental change which must be explained.

Seventh, the case of the direct subsidy to production is also omitted because it too introduces an irregular process and is perhaps best handled as a fluctuation.

Eighth, the marginal propensity of individuals to consume is a part of the known data. When the irregular processes of income creation, which are due to the acceleration principle and to the method of subsidies, are eliminated by hypothesis, income creation is a series of income increments which reach a definite limit. This series is the fundamental income creation about which the deviations created by the acceleration principle and the method of subsidies fluctuate. The marginal propensity of individuals to consume controls the limit to which this series rises and determines the increase in income. At any period, individuals desire to consume a certain proportion of an increase in income. Although this proportion may change through time with changes in income, anticipations, and the distribution of income within the economy, some proportion or marginal propensity to consume must exist. The inclusion of this assumption within the known data permits the formulation of the income creation in precise terms.

Ninth, all reactions to the imposition of the tax and the

spending program are in the correct direction. This assumption eliminates the psychological misapprehensions which cause reactions to be in the opposite direction from that which the ultimate adjustment requires. The following changes are eliminated under this assumption: (*a*) buying or selling in anticipation of shifts in demand; (*b*) a downward shift in the consumption function as a result of the impact of the tax; (*c*) an upward shift in the same function as a result of an unexpected increase in income; (*d*) any upward or downward shift in the schedule of the marginal efficiency of capital as a result either of the impact of the tax or of the spending of the receipts; and (*e*) any errors of over-optimistic or pessimistic forecasts. If the ultimate adjustment to a policy is to create income, such deviations are in time overcome.

### THE VARIABLES

The initial step in establishing the principle is to discover the determinants. What are the factors upon which income creation by means of taxation depends? The previous chapter offers the clue to the answer, for it shows that there are mutual interactions of the impact of the tax and of the spending of the receipts upon both consumption and investment. There are three determinants or independent variables: taxation, investment, and consumption.

As the rest of this essay is an analysis of the interaction of these three variables, and in particular of the influence of changes in taxation upon consumption and investment, it is desirable at this point to establish their independence. Each is determined by factors which are distinct and separate from those which determine the other variables.

The determinants of taxation or of the proportion of tax outlay to total income are considered first: (*a*) the willingness of individuals to accept social responsibility for the expenditure and to meet the cost by taxation; (*b*) the nature of the economy—the government is likely to provide fewer services in a rural than in an urban economy; (*c*) the size of the national income—a wealthy economy is likely to demand a larger proportion of government services than a poor one; (*d*) the course

of technical progress—the development of the automobile required a highway system, which government furnishes more satisfactorily than would private enterprise; (e) the kind of taxes—political pressure and existing opinions as to the kind of taxes to be used influence the lawmakers in choosing the kind of levies, whether consumption, property, or income taxes, and whether the rates are proportional or progressive; (f) the state of employment—when there is full employment an increase of taxation causes a shift of income, when there is an underemployment equilibrium new taxation may raise income.

The factors which determine how much individuals consume out of their available income may be listed as follows: (a) the degree of inequality in the distribution of income (the greater the inequality, the smaller is likely to be the proportion of income consumed); (b) the size of the income relative to the standard of living (the larger the income, the smaller is the proportion consumed); (c) the strength of the desire for present satisfaction relative to future wants. The more intense the desire for present enjoyment in relation to the motives for saving, the larger is the proportion of income consumed.

The conditions which determine investment over the long run are those which govern spontaneous or dynamic investment, and not those which cause induced investment, because the latter is only temporary. The determinants of dynamic investment are as follows: (a) Innovations. The development of new techniques of production, the discovery of new sources of raw materials, and the opening up of new markets, are all a part of the process of innovation. (b) A decrease in the supply price of investors. When investors become willing either to invest more at the same rate of return or to invest the same amount at a lower rate, investment opportunities which were formerly unprofitable become profitable. This cost reduction permits a permanent extension of the roundabout process of production and the development of processes formerly unprofitable.

Under the previous assumptions each of the variables is restricted. The tax must be proportional. Investment must meet the conditions of a unit elasticity, a return which includes the tax, and a horizontal supply schedule of savings. Consumption

increases according to a known marginal propensity of individuals to consume. In all cases of income creation by means of taxation, however, these three variables are the controlling factors.

#### THE AVERAGE PROPENSITY OF INDIVIDUALS TO CONSUME

To judge the impact of the new taxation upon consumption it is necessary to employ the concept of the average propensity of individuals to consume, which states the proportion of total available income which individuals spend for consumption. It can be written  $C/Y$ , where  $C$  is the consumption which individuals desire out of their available income, and  $Y$  is the total of this available income.

The distinction between income and available income is worth noting. Not all income to individuals is available for their consumption. They must devote some of their income directly and some of it indirectly to the payment of taxes. After the tax receipts are subtracted from individual income, the remainder is available for consumption. This distinction is not always drawn, and sometimes tax outlay for consumption is included as a portion of both consumption and income. This statement of the average propensity to consume is likely to give a higher proportion, as the impact of the tax raises consumption more than income. In the present treatment, however, when the average propensity to consume includes the tax outlay, it is referred to as that of the community in contrast to that of individuals. When the community, through its power of taxation, takes income from some or all individuals and spends the receipts for the consumption of others, the normal considerations which determine the choice of individuals between consumption and saving cannot operate on the portion of their income which is taxed away.

The average propensity of individuals to consume is a function of income. In general, the smaller the total available income, the higher is the proportion which individuals consume. Also, the larger the income, the smaller is this proportion. The relation between the total of individual income and the proportion consumed at different levels may be drawn like the normal

demand schedule and may be referred to as the consumption function of individuals as a group. Its elasticity is probably greater than unity. If it were unity, this would mean that as available income increased, consumption and the standard of living remained constant. If the consumption function had an elasticity of less than unity, the standard of consumption would decrease absolutely as income increased. Either situation is unlikely under the assumptions upon which the consumption function of individuals is based.

As in the case of the demand schedule, the consumption function only holds true "other things being equal." These constants are: (a) the rate of interest and other prices are unchanged as income increases; (b) the same relative distribution of income exists although the total grows; (c) the same variety of consumers' goods is on the market no matter what the variation in income; (d) the increase in income is not due to innovations, for then the income distribution and the kind of consumers' goods would change in later periods; (e) the desire to be thrifty or its opposite is constant; and (f) the prospect of the future remains unchanged. These conditions or assumptions are necessary to establish the consumption function for a period, to prevent its having an upward or downward temporary bend somewhere along it, and to isolate the influence of changes in available income upon consumption. In reality, these conditions alter through time, but they are approximately constant for short periods. The correlation of personal income and saving bears out this theoretical approach. The lowest income group consumes 100 per cent of its income, and sometimes more, while the highest consumes the smallest proportion. If there is a change in thriftiness, in the production of new consumers' goods, or in prices or interest rates, the consumption function shifts on its axis.

The consumption function refers to a short period, one so short that it is sometimes called an instant. It states the relation of the proportion of income consumed to the level of income under the given assumptions. The increase in income to which the consumption function refers is not a historical growth. It merely says what proportion of income is consumed if the avail-

able income as well as the special conditions are given. The consumption function does not lead to the faulty conclusion that, as income increases through time, a smaller and smaller proportion is consumed. A historical growth in income rests upon dynamic factors which violate the necessary conditions upon which the consumption function is based.

The average propensity of individuals to consume is functionally related to the marginal propensity. The latter determines the slope of the consumption function at any point. The marginal propensity to consume states the proportion of an increment of available income that is consumed. The consumption function is composed of a series of income increments (changes in consumption); and the proportion is  $C/Y$  for the average propensity and  $c/y$  for the marginal propensity.

It seems logical that the two propensities move in the same direction. When income is low and only the necessities of life can be purchased, the average propensity is high. A small increase in income permits the consumption of much needed necessities or much desired semiluxuries. It is logical for the marginal propensity to be high also. When income is so great that the need for necessities is entirely satisfied and consumption includes many luxuries, an income increment can add little to consumers' satisfaction. The average propensity is low, and it is logical for the marginal propensity to be likewise. Thus, the elasticity of the consumption function is greater when the average propensity is high than when it is low.

In reality, the development of new techniques of production, new and improved consumers' goods, cheaper sources of raw materials, and the increase in population all contribute to the growth in income. These dynamic factors cause the consumption function to shift to the right through time. The improvements in consumers' goods and the abundance of them, as well as the demand by each successive generation for a higher standard of living cause this shift and explain why the proportion of income consumed has remained constant over long intervals.<sup>2</sup>

Although the average propensity of individuals to consume is, in certain periods, equal to that in other periods, it is not always constant. During deep depressions it is high, while in

periods of prosperity it is lower. There is a middle level about which it seems to fluctuate.

In the course of dynamic events the marginal propensity may temporarily move away from the average propensity. In a deep depression, when the latter is high, the former may be low, because there is a general fear or uncertainty concerning the future, because the income increment is expected to fall in the future, or because the income increment goes mainly to the rich whose marginal propensity is low. When prosperity is reaching speculative proportions, the average propensity is likely to be low. Nevertheless the marginal propensity may be high. The income increment may be received by those who have a high marginal propensity. Individuals often consume most of their speculative winnings.<sup>3</sup> Such divergencies between the propensities cannot last long, for the marginal propensity in time alters the average propensity. Since the latter has been constant over long intervals, it is likely that the former has been constant also. The marginal propensity of individuals to consume may well have fluctuated about an historical norm. The same dynamic forces operate in both propensities. In the long run, individuals spend their available income so that the marginal dollar spent for all kinds of goods yields the same satisfaction; and this is true also in the case of the division of income between consumption and saving. Individuals will readjust their consumption-saving pattern along their consumption function, no matter what is the cause of the reduction in their available income.\*

Of course this analysis deals only with the initial impact of taxation upon consumption. Although the initial result upon the consumption of taxpayers may be the same in the case of

\* This footnote may clarify the argument. The given conditions which determine the consumption function of individuals are not altered by the imposition of consumption, property, or income taxes. None of them alter the individual's willingness to save, the kind of consumers' goods, and the long-run prospect, so that, providing the reduction in available income is the same for the different kinds of taxes, there is no reason why the impact of the different taxes upon consumption and saving is not the same. Note, however, that the argument holds for the long run. Individuals may not react as quickly to hidden taxes and to consumption taxes as to property and income taxes, but this reaction would only be temporary, providing other things are equal.

consumption, property, and income taxes, when the individual has to pay the same tax bill, nevertheless this result does not hold for the ultimate income creation. In this case it is necessary to take account of the different impacts of these three kinds of taxes—consumption, property, and income—upon investment. These various impacts cause differing amounts of income creation in the long run, and hence establish different levels in consumption, according to the different kinds of taxes imposed.

### TAXATION AND THE CONSUMPTION FUNCTION

It is necessary to divide this topic into two distinct steps. There is first the effect of the impact of new taxation on the consumption-saving pattern of individuals; that is: how do the taxpayers react to the imposition of new levies? There is, second, the reaction of individuals to income-creating tax outlays. Clearly, if there is to be income creation as a result of taxation, there must be an initial income increment, which then reacts through subsequent spending and re-spending to raise income and consumption.

During prolonged unemployment, the average propensity of individuals to consume is higher than during full employment. In general, everyone's current income is smaller and only the more urgent needs and desires can be satisfied. Less income is saved. The proportion consumed is higher. Some individuals, such as those who have been unemployed for some time and capitalists who have lost their fortunes, may consume more than 100 per cent of their current income. They may live by borrowing, either governmental or private, spending past savings, and selling old assets. On the other hand, there are many persons who continue to save out of current income. Voluntary saving, insurance payments, and corporate saving rebuild depleted reserves. From the point of view of the economy, the dissaving of one group is an offset to the saving of the other.

When the average propensity of individuals to consume is 100 per cent for the economy as a whole, there may be still the saving of some individuals which is offset by the dissaving of others. Even during prolonged unemployment there may be saving by certain groups. The question arises, how will these



individuals react in distributing the available income between consumption and saving when they are taxed? The consumption function of the individual provides the answer.

The consumption function has a negative slope, and the average propensity of the individual to consume declines as his available income increases. When the process is reversed, a decline in available income raises the average propensity of the individual. The available income falls when new taxes impinge upon the individual. The tax has raised the individual's average propensity by reducing his available income.

If each individual reacts in this manner to a fall in his available income, the consumption function of all individuals is the sum of these changes. A reduction in available income means that only higher wants can be satisfied. Since the rate of return to investors is constant, the inducement to investors is insufficient to maintain the same saving out of the smaller income. Saving declines in favor of consumption and the average propensity rises.

There is, however, one qualification to reversing the consumption function of individuals. When income increases there are no contractual agreements how it is to be spent. The income recipient is free to consume as much or as little of the increment as he wishes. When available income is reduced, there may be, however, contracts which extend into the future and commit one to saving. Life insurance payments, mortgage commitments, and loan repayments may require the taxpayer to meet the same payments after the tax as before. The rise in the average propensity may be slow and spread over a longer time. Such contracts are eventually paid off, and many of them, particularly insurance policies, incorporate provisions for reducing the payments. In either case, the individual is not entirely free to reduce his saving by any amount immediately upon the decline in available income. There is, however, a mitigating circumstance. Not all individuals who save are under such contracts, and many who are save more out of their current income than the contractual payments. There is a margin of voluntary saving which may be adjusted quickly. This circumstance may cause the average propensity to rise even in the

short run. There is little doubt of its rise in the long run after the adjustment in the contracts.

When the consumption function is reversed, some individuals are reluctant to give up a standard of living to which they have become accustomed. They consume only a fraction of an income increment; but when an equal decrement occurs they cling to their tastes and their consumption habits, and do not reduce their consumption in the same manner as they increased it. For a not insignificant group of individuals, the consumption function is more elastic when income increases than when it decreases.

In referring to a reduction in available income, no hint of the kind of taxation which causes it has been given. In the long run, only the amount and not the kind of tax makes a difference in the reduction in available income.<sup>4</sup> When an individual has an income of \$5000, for example, and has to pay a tax of \$500, it makes absolutely no difference to his decision concerning consumption how the tax has been computed. If it is a land tax, a property tax, or an income tax, his available income has fallen in any case and, providing the tax payment is the same in each, the reductions are equal. Marshall, for example, actually suggested basing the tax on the number of windows in a house as providing a rough measure of ability to pay.<sup>5</sup>

Sales taxes and other consumption taxes which are passed on to consumers in higher prices are no different. The same income and the same distribution between consumption and saving would yield a smaller real consumption for taxpayers. A greater total satisfaction would be received by saving a smaller proportion of income. The tax, whether it is visible or hidden, reduces the available income of individuals. If the consumption tax totals \$500, as in the above example, available income is reduced by the same amount as if the tax were based on property or income; and the average propensity of individuals to consume is the same for every form of tax.

The present analysis has been concerned with the influence of taxation upon the average propensity of individuals to consume. There is also an interaction between the marginal propensity and taxation. The marginal propensity determines the slope of

the consumption function; the higher the former, the more elastic is the latter. The more elastic the consumption function, the smaller is the rise in the average propensity to consume which follows a reduction in available income. The smaller the rise in the *average* propensity, the less is the initial income creation. It therefore follows that the higher the *marginal* propensity to consume, the smaller is the initial income creation.

Let us now take the second step which must be based on the hypothesis that the taxation causes income creation. Proof must wait until the next section. The initial income increment is permanent, since all the economic determinants are constant; and the process of their interaction repeats itself indefinitely. There is set in motion a succession of income increments which extends as an infinite series through time. The ultimate size to which the income increment grows is determined by two variables, the marginal propensity of individuals to consume and the extent to which the tax structure impinges on the income increment. In general, the higher these two determinants, the larger will be the income increment, and the greater the income creation.

If the tax structure draws some of the income increment away from individuals, their available income is reduced. Since the government spends the receipts, they remain in the income stream. The sum of the increment of individual consumption and tax outlay is larger, the higher the proportion of the income increment which is taken as taxes. Thus, the higher the proportion of the income increment which is taxed, and the higher the marginal propensity of individuals to consume, the greater is the ultimate income creation.

The influence of the incremental tax upon income creation may be stated in a revised marginal propensity to consume, which is designated as that of the community. The marginal propensities of individuals and of the community to consume are unequal, although the latter includes the former. The community's desire to enjoy social consumption and its attitude toward public welfare, together with the power to tax, are the additional forces to the marginal propensity of individuals to consume. Some authors fail to draw the distinction between the

two propensities, and omit the influence of the incremental tax upon income creation when the receipts are devoted to the community's consumption.

Among those taxes that impinge upon the income increment there is a difference in degree and in timing. Under the proportional income tax, a constant fraction of the increment is taken as taxes and available income is thereby reduced. The progressive income tax likewise impinges on the income increment, but its incremental receipts are irregular through time as the income distribution varies. The recipients of the income increments in the first few periods are likely to have been formerly the unemployed and wage earners who are exempt from the progressive tax. In later periods a larger proportion of the increment, which itself has increased, is distributed as profits to the middle- and higher-income groups. Their growth in income raises their tax payments. There is an incremental tax which impinges on their income increment. The impact may be confined to a tax group, in which case the tax rate for the group applies directly as the incremental tax. The increase in income is more likely, however, to raise some taxpayers from one group to the next above. Such persons would pay a much larger tax. The expansion in profits relative to other income shares may not, and in fact is not likely to last indefinitely. Reductions in profit margins due to increases in factor prices, and possibly reductions in selling prices, reduce the relative share of profit recipients when full employment is approached. The impact of the progressive tax would then be altered again.

Consumption taxes impinge on the income increment, no matter whether they are visible or hidden through price increases; and the available income increment is diminished.<sup>6</sup> If consumers are rational and consistent, they readjust their spending pattern to consumption taxes in the same way as for any other incremental tax. Insofar as consumers operate under a budget, they may be slow to readjust their consumption outlay to meet the taxes. This causes the marginal propensity of individuals to fall temporarily. In the long run the budget is adjusted, for otherwise individuals would discover that they were saving more than they intended.

Land and property taxes may not impinge on the income increment; and if they do, their reaction is retarded. Only when the value of the tax base increases as a result of the income increment does the property tax impinge on the increment. The value of land and real property changes slowly in adjustment to changes in national income. There is a lag in altering the appraised valuation of land and property when national income falls. When income rises, the lag may be even greater, as it is not to the advantage of the taxpayer to initiate a revaluation. When land and property are sold infrequently and the tax authorities are lax, the appraised valuation may increase slowly if at all. Of course, in practice the increase in income almost certainly expands real property. The income increment may be devoted largely to automobiles, houses, furniture, and other durable consumers' goods; and in this case the property tax operates like consumption taxes. To this extent they impinge on the income increment.

#### FORMULAS FOR INITIAL INCOME INCREMENT

The foregoing discussion has not at all times remained within the strict assumptions with which this chapter began. However, the preliminary groundwork is complete, and the argument may be stated in exact form within the initial assumptions.

Before the tax is imposed, let income be  $Y$ , consumption  $C$ , and investment  $I$ . Income equals consumption plus investment:  $Y = C + I$ . Consumption equals the average propensity of individuals,  $AP$ , multiplied by the available income,  $Y$ . In the absence of any taxation and tax outlay, income is equal to available income.

During the process of income creation, taxpayers receive income increments. They react to these increases according to their consumption function, which has remained unaltered. Thus the average propensity of taxpayers, which rose as a result of the impact of the tax, now falls somewhat as the result of income creation. Thus their consumption changes along the consumption function of individuals. Note, however, the imposition of taxes raises the consumption function of the community and changes its slope from that of individuals. The two consumption functions must be distinguished.

Let a proportional tax be imposed, which impinges on the entire national income. This tax diminishes both the consumption of taxpayers, since this reduces their available income, and investment, since it raises the supply price. The question at once arises, is there income creation when both the consumption of individuals and investment are reduced by the tax, even though the tax receipts return to the income stream through the government spending? The answer to this question falls into two parts: first, the reaction in investment; second, that in consumption of taxpayers.

Investment before the tax,  $I$ , can be expressed in terms of income and consumption,  $I = Y - APY$ , but there are other data on investment which have been determined by several initial assumptions. The supply price of investors is a direct function of the tax; the supply schedule of investment is horizontal. The schedule of the marginal efficiency of capital has an elasticity of unity. The remaining assumption, which does not concern investment directly but which operates upon it through the previous two, is that the tax is a proportional income tax.

Let the supply price of investors before the tax is imposed be  $j$ . And let the proportional tax be  $t$  which states the proportion of the income increment taken as taxes. The question is, what must be the yield to investors to cover the incremental tax in addition to the normal supply price,  $j$ ? Let the necessary yield be  $e$ . Then  $e - te = j$ . (See Figure 5 in Appendix B to this chapter.)  $(1 - t)e = j$ , and  $e = j/(1 - t)$ . The yield to investors, which has risen enough to cover the tax, is equal to the normal supply price divided by one minus the proportional tax.

Since the yield which investors demand has risen, the former investment is unprofitable. Its marginal productivity does not cover the tax. Investment must decline until the yield has risen to the necessary height. The reduction in investment is controlled by the schedule of the marginal efficiency of capital. By hypothesis, this schedule has an elasticity of unity. It is an equilateral hyperbola. The equation for this schedule can be stated:  $ji = \text{a constant}$ , where  $j$  is the normal supply price of investors and  $i$  is the equilibrium amount of investment. An increase in one determinant causes an equal and opposite reaction

in the other. The tax raises the yield which investors demand, so that  $e = j/(1 - t)$ . The reduction in investment must be proportionately equal: the product of gross supply price and investment must continue to equal the constant. If the tax raises the yield to  $j/(1 - t)$ , then investment must decline to  $i(1 - t)$  in order for  $ji$  to be constant. The imposition of the proportional tax,  $t$ , causes investment to become  $(1 - t)$  times the original equilibrium investment, that is:  $(1 - t)(Y - APY)$ .

When the consumption function is given, it is possible to move along the schedule in terms of either the average or the marginal propensity of individuals to consume. Before the imposition of the proportional tax, consumption is the product of the average propensity and the available income, which may be written  $APY$ . The reduction in available income is  $tY$ , after the tax is imposed. Consumption declines from  $APY$  because the tax is met in part by a reduction in consumption. The marginal propensity to consume indicates the fraction of the tax payments which are met out of consumption. Consumption of taxpayers after the tax may be written  $APY - mptY$ .

It is now possible to express the initial income increment under the given assumptions. The income increment is the difference between the consumption of taxpayers after the tax, plus the tax outlay, plus the profitable investment, minus the level in income before the tax. The expression is:  $APY - mptY + tY + (1 - t)(Y - APY) - Y$ . This reduces to:  $tY(AP - mp)$ .\*

\* There are two other proofs of the principle of income creation by means of taxation which serve to check the foregoing formulation. First, if, before the tax, the available income,  $Y$ , equals  $(C + I)$ , the increment is equal to the change in  $Y$  after the tax. The consumption function indicates the average propensity to consume before and after the tax. Let  $AP_1$  be the propensity before the tax and  $AP_2$  be that after the tax when available income has been reduced by the tax receipts. Excluding the tax outlay, consumption after the tax is  $AP_2(Y - tY)$ . Investment before the tax is  $(Y - C)$ , or  $(Y - AP_1Y)$ . Investment after the tax is expressed  $(1 - t)(Y - AP_1Y)$ . The initial income increment is the sum of the tax outlay and consumption and investment after the tax, minus the income before the tax. The initial income increment may be expressed:  $AP_2(Y - tY) + tY + (1 - t)(Y - AP_1Y) - Y$ . This statement reduces to  $AP_2(Y - tY) - AP_1(Y - tY)$ .

At once the question arises, is this expression equal to the foregoing formula in the text? In the formula,  $AP_2(Y - tY) - AP_1(Y - tY)$ , the first term is the consumption of taxpayers after the tax, and we can substitute for this term the

If the consumption function had an infinite elasticity, and the average propensity equaled the marginal propensity, this expression would equal zero. If this were true, there would be no income creation nor, for that matter, income deflation. From the previous discussion we know, however, that the consumption function has a negative slope and is *not* infinitely elastic. Thus, under these conditions the imposition of a proportional tax creates an initial income increment. Instead of taxation being deflationary as is the popular opinion, we have proved, at least under certain conditions, that the opposite is true.

This formulation, furthermore, is not as limited as one may suspect, for the assumptions are as unfavorable to the principle of income creation as can be at the present stage of the argument. That is, the supply price increases by the full amount of the tax, and the supply schedule is horizontal and thus causes the greatest reduction in investment. For all cases in which the elasticity in the supply schedule is less than infinitely elastic, investment is reduced less by a given tax and the income creation is greater.

Likewise the assumption that the schedule of the marginal efficiency of capital has an elasticity of unity includes all those cases of less elasticity. That is, if the schedule has an elasticity of less than unity a given tax causes a smaller reduction in investment and hence creates a larger initial income increment.

In this way, the present formulation includes all positions of the supply schedule and all positions of unit elasticity or less in the demand schedule. We have not established a principle for all cases nor for all taxes, but we are well on the way.

---

expression,  $APY - mptY$ , which is also the consumption after the tax.  $AP$  and  $AP_1$  are equal, and the two expressions are seen to be the same.

The second proof of the statement in the text of the initial income increment is to formulate the necessary credit creation. The initial income increment is identical with the new credit which is expanded by the banks to bring total saving to equality with the profitable investment. Hence the new credit equals the difference between the equilibrium investment after the tax, that is,  $(1 - t)(Y - APY)$  and voluntary saving out of available income.  $Y - tY$  is available income from which individual consumption after the tax is subtracted to obtain voluntary saving. The new credit equals  $(1 - t)(Y - APY) - [Y - tY - (APY - mptY)]$ . This reduces to  $tY(AP - mp)$  which is the statement for the initial income increment in the text.



There is the case in which investment does not decline as a result of the new tax. When the tax falls upon personal income, banks and corporations may ignore the tax. The self-interest of these institutions may prevail over that of the common stockholders. In this situation, the reduction in personal saving and investment is just offset by an increase in bank and corporate investment. The total is unchanged.

The initial income increment may be written:  $APY - mptY + tY + (Y - APY) - Y$ , which reduces to:  $tY(1 - mp)$ . As is expected, this expression is larger than that for the previous case. The two cases,  $tY(1 - mp)$  and  $tY(AP - mp)$ , become equal when  $AP$  is equal to 1. Although in the bottom of a severe depression the average propensity may be 100 per cent, in an underemployment equilibrium it is likely to be less.

The expression,  $tY(1 - mp)$ , states the initial income increment also in the special case of consumption taxation when there is an equal distribution in income and when all individuals have the same consumption function. Consumption taxation does not alter the supply price of investors and does not reduce investment. The payment of consumption taxes causes the same decline in available income as the payment of an equal sum of any other kind of taxes.\*

This formulation has established the limits within which fall the initial income increments in a great many cases. The lower limit which is set by the greatest reduction in investment is given as  $tY(AP - mp)$  when the supply schedule is horizontal and the demand schedule has an elasticity of unity. The upper limit is fixed when there is no reduction in investment, and

\* The identity of the two expressions  $tY(1 - mp)$  and  $tY(AP - mp)$  when  $AP$  is 100 per cent proves the soundness of the formulation. When the average propensity to consume is 100 per cent, investment is zero and is unchanged by the imposition of the proportional tax. This is clearly the result when every individual consumes all his income. But it is equally true when the saving of some persons just offsets the dissaving of others. The community consumes all its income and investment is constant at zero. The initial income increment in this instance must equal that when investment is positive but also unchanged by the tax.

These general observations may be proved by another approach. When income equals consumption and investment is zero, the expression for the initial income increment may be written just in terms of consumption,  $(Y - mptY + tY - Y)$ , which reduces to  $tY(1 - mp)$ , because  $AP$  is 100 per cent.

this is approached as both schedules become less elastic. In fact, when either is absolutely inelastic investment is unchanged by the tax. Thus for all cases between an infinitely elastic supply schedule and an absolutely inelastic one, and between unit elasticity and absolute inelasticity in the demand schedule, the initial creation falls within the limits  $tY(AP - mp)$  and  $tY(1 - mp)$ . (See Appendix B to this chapter.)

In the following chapter, the analysis must proceed to establish the ultimate income creation for these foregoing cases. This analysis must also include all the remaining cases in which the demand schedule has an elasticity of unity or more. A general policy of income creation cannot be established until we have examined all degrees of elasticity.

## APPENDIX A

### DIAGRAMMATIC PROOF OF INITIAL INCOME INCREMENT

The previous argument may be proved diagrammatically. In Figure 3 income is measured along the horizontal and the components of income along the vertical axes. The consumption function is the line  $cC$  and shows the relation of consumption to available income. It is drawn as a straight line for convenience, although this is not necessary for the argument. Added to the consumption function is the equilibrium investment,  $ac$ , which is not a function of income. It is determined by the demand schedule for investment and the rate of interest. Let  $os$  be at a 45 degree angle from the horizontal and the intersection of  $os$  with  $ab$  determines the underemployment equilibrium.

How does the imposition of the proportional income tax alter this equilibrium? The answer requires us to draw two more lines and then to turn to Figure 4.

Let the point  $P$  move along  $cC$  so that the perpendicular from  $P$  to  $bf$  equals the tax receipts,  $tY$ .  $P$  indicates the consumption of individuals out of available income after tax. Let a line parallel to  $os$  be drawn through  $P$  and this must intersect  $bf$ , say at  $z$ . The triangle  $zPm$  is small when the tax rate is low and it increases as the rate rises. The tax receipts,  $tY$ , equal  $Pm$ , equal  $mz$ , as this triangle is a 45 degree right triangle. The extent to which  $m$  lies below the consumption function indicates the amount by which individuals reduce their consumption to pay the tax. Likewise the distance that  $z$  lies

above  $C$  shows how much the tax is paid out of saving. Saving out of available income after tax is  $zb$ . The question arises, "Is there any demand for this saving?"

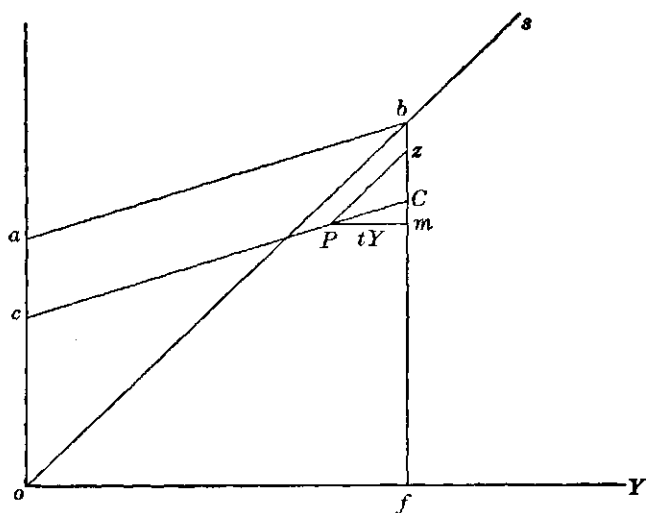


FIG. 3. Income, Consumption, and Investment

The answer to this question is to be found in Figure 4. Here the supply of saving out of available income after tax is compared to the demand for investment left after tax. Figure 4 is a double diagram. It shows the equilibrium investment as a function of the tax under

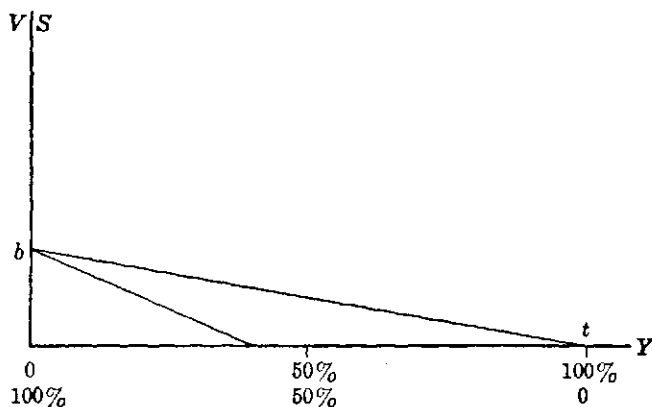


FIG. 4. Effect of the Proportional Income Tax

the previous assumptions that the demand schedule has an elasticity of unity and that the supply schedule is horizontal; and it shows the schedule of saving out of available income after tax. Saving and investment are measured along the vertical while the tax and income after the tax are measured along the horizontal in opposite directions. This axis shows the tax rising from zero to 100 per cent and available income falling from 100 per cent to zero per cent of the underemployment equilibrium level. A 10 per cent tax correlates investment and saving out of a 90 per cent level in income. Saving out of available income becomes positive at somewhat more than 50 per cent of the underemployment equilibrium level, as is also shown in Figure 3, and rises with income until at 100 per cent saving out of income equals investment. Saving and investment are measured vertically to  $b$  which equals  $bC$  in Figure 3. Because of the assumptions in this chapter the investment function is written  $(1 - t)(Y - APY)$ .<sup>\*</sup> This is shown in Figure 4 as  $bt$ .

Comparison of the investment demand schedule as a function of the tax with the supply of saving out of available income after tax shows that for all values of the tax above zero the demand exceeds the supply. This must be true because saving does not become positive until available income is considerably above zero. The savings function therefore lies below, and is steeper than, the investment schedule. This gap is filled by the banks and the proportional tax thereby creates income.

## APPENDIX B

### THE IMPACT OF THE PROPORTIONAL INCOME TAX UPON INVESTMENT IN TERMS OF A DIAGRAM

The line  $AB$  indicates an elasticity of unity in the schedule of the marginal efficiency of capital. Point  $P$ , which is the intersection of  $AB$  and  $PQ$ , indicates the normal supply price of investors before the imposition of the tax. In an underemployment equilibrium there is an equilibrium between saving and investment. The equilibrium rate of interest is  $PU$  (that is,  $j$ ) and the equilibrium investment ( $OU$ ) (that is,  $i$ ). Let  $ST$  represent any schedule of the marginal efficiency of capital the elasticity of which is less than unity.  $ST$  must pass through  $P$ , as  $PU$  is the normal supply price of investors in an underemployment equilibrium. Although  $ST$  must pass through  $P$  to fulfill

<sup>\*</sup> See page 53.

the initial condition, it may take any position from the extension of  $UP$ , to a curve which is just less elastic than  $AB$ .

Let  $MN$  be drawn parallel to  $PQ$ , so that the perpendicular distance from  $MN$  to the  $X$  axis equals the investors' supply price, including the tax, when the supply schedule is horizontal from  $P$  to  $Q$ . When the tax is zero,  $MN$  coincides with  $PQ$  and, as the tax increases,  $MN$  rises perpendicularly from  $PQ$ .  $NO$  increases with the increase in

the tax according to the formula  $e = \frac{j}{(1-t)}^*$ , where  $j$  is the normal supply price excluding the tax, and  $e$  is the return including the tax.

With this preliminary explanation, the essence of the diagram becomes clear. When  $MN$  lies above  $PQ$ , it must intersect  $AB$  to the

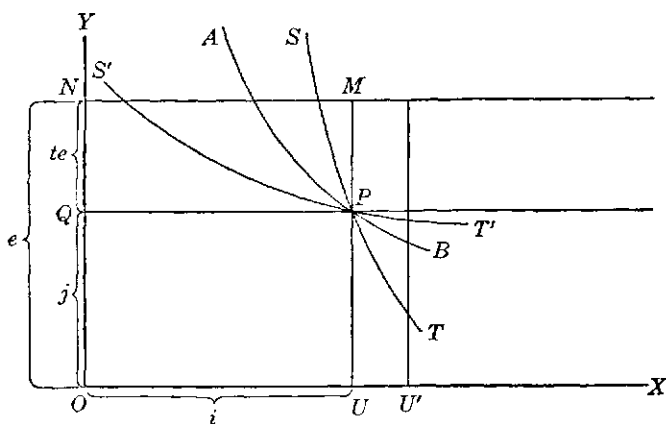


FIG. 5. The Impact of the Proportional Income Tax upon Investment

left of its intersection with  $ST$ . For any given tax the reduction in investment is greater when the schedule of the marginal efficiency of capital has an elasticity of unity than when its elasticity is less than unity. Furthermore, the reduction is less the less elastic the schedule, until in the position  $UP$  its inelasticity is absolute and the reduction in investment is zero. The diagram also demonstrates that  $ST$  takes any position between  $AB$  and the extension of  $UP$ , and if its position is constant, the higher  $MN$  the wider is the gap between the intersection of  $MN$  and  $AB$  and the intersection of  $MN$  and  $ST$ . Thus the difference in the reduction of investment between  $AB$  and  $ST$  in-

\* See page 53.

creases with the increase in the tax. In other words, the higher the tax the larger is the difference between the reductions in investment for  $AB$  and  $ST$ .

The significance of the diagram for income creation is unmistakable. When the schedule of the marginal efficiency of capital has an elasticity of less than unity, and when investors include the tax in their supply price, the resulting income creation is greater and the impact of the tax reduces investment less than when the elasticity is unity. The higher the tax the more the income created exceeds that for the case of unit elasticity. The impact of the tax upon investment influences the income creation of the initial increment.

Figure 5 also indicates that a given tax reduces investment less the more inelastic is the supply curve.  $MN$  is horizontal because  $PQ$  has an infinite elasticity. As  $Q$  falls and the slope of  $PQ$  becomes less elastic, the slope of  $MN$  becomes less elastic for two reasons. First, the drop in  $Q$  makes  $N$  fall, and second, the given proportional tax raises the supply price by a constant multiple, so that  $QN$  is less than  $PM$ . Hence  $MN$  and  $PQ$  are not parallel,  $MN$  having the steeper slope. Thus the intersection of  $MN$  with  $ST$  lies more to the right the more inelastic is  $PQ$ . When it is absolutely inelastic, investment is unchanged by the tax. The more inelastic the supply schedule, the smaller the reduction of investment which is the result of the tax, and hence the larger the income creation.

## CHAPTER IV

### THE METHOD, THE MULTIPLIER, AND THE MARGINAL EFFICIENCY OF CAPITAL

ONCE THE INITIAL INCOME INCREMENT has been formulated, it is possible to go on to the ultimate income creation. This depends not only upon the tax structure but also upon the way in which the tax receipts are spent. This chapter indicates the conditions which determine the ultimate income creation, as well as those conditions which determine how the receipts should be spent to achieve the maximum result. It is through the tax outlay that the gap in the analysis of the previous chapter can be filled, making it possible to establish a general principle.

The extent and nature of income creation through time is the heart of the present analysis, which amplifies that of the previous chapter and is based upon the same assumptions. Whenever the analysis deviates, the alteration in the particular assumption is noted.

#### INCOME CREATION

Income creation by taxation has been established within certain limiting assumptions. The initial income increment depends upon the reaction to the imposition of the tax on the part of consumers and investors. The extent of the income created is not, however, confined to the initial increment, for this increase is permanent and sets in motion an infinite series of increments. The initial income increment is not to be thought of as tax outlay or consumption or investment, for it is the difference between the sum of these expenditures in one period and the income of the previous period. Whether the initial income increment is called consumption, investment, or tax outlay, is unimportant. What is significant is its permanence.

Clearly, when the increment melts away in time, there is no

lasting income creation. The initial income increment which has been formulated in the previous topic is permanent as long as the consumption function, the tax policy, and the schedule of the marginal efficiency of capital, are unchanged. In each income period in which the income received in the previous period is spent, the initial income increment is passed from one group to another. If 100 per cent of each successive income increment were spent for consumption, income creation would increase in each period by the full amount of the increment and would continue to infinity. This perpetual motion toward Utopia is impossible because of the negative slopes in the consumption function and the schedule of the marginal efficiency of capital, and because of the bottleneck of full employment. Although income creation does not proceed to infinity, neither does it stop with the initial income increment. There are several successive periods in which income creation grows before the ultimate process ends and the income increment remains constant.

#### THE SIMPLE MULTIPLIER

The initial income increment is the difference in the level in income between the first period in which the policy operates and the one before its adoption. In the second period in which it operates, the initial increment appears in two forms: (a) it is repeated itself, as it is a permanent addition; (b) the increment of the first period is available income in the second. The recipients are free to spend this portion of the total increment of the second period as they wish. Their marginal propensity to consume indicates how much of this increase is consumed. In each subsequent period the process repeats itself. There is the initial income increment, which is no longer merely the beginning in a temporal sense but rather in the sense of a recurring process; and there is the available income increment which is received from the previous period.

This process may be expressed as follows.<sup>1</sup> If  $y_1$  is the *initial* income increment,  $y_1$  is the income increment in the first period. The equation for the ultimate income increment is expressed  $y_1[1/(1 - mp)]$ . Economists call the first term,  $y_1$ , the multiplicand and the second,  $1/(1 - mp)$ , the multiplier. The latter



is a function of the marginal propensity of individuals to consume. The higher the marginal propensity, the larger is the multiplier and the greater the ultimate income increment. Since  $(1 - mp)$  is equivalent to the marginal propensity to save, some authors prefer to express the multiplier as  $1/ms$ , where  $ms$  is the marginal propensity to save.

The marginal propensity of individuals to consume determines not only the ultimate increase in income but also the rate of increase. The higher the marginal propensity of individuals to consume, the larger is the growth in income; but the rate of growth is slower and the time required to reach the ultimate adjustment is longer (if it is not ridiculous to refer to a long and short infinite series). For example, when the marginal propensity is 0.2, the multiplier is 1.25. When the initial income increment is  $y_1$ , the second increment is  $(y_1 + 0.2y_1)$ , or  $1.2y_1$ . There is only .05 difference between the ultimate growth ( $1.25y_1$ ) and the income increment for the second period. Extending the process on to infinity adds only  $.05y_1$ . When the marginal propensity is low, most of the ultimate adjustment is made in the first few periods. When the propensity is higher, on the other hand, the rate of change is slow and the time required is longer. For example, when the marginal propensity is 0.8, the second increment is  $(y_1 + 0.8y_1)$  and the multiplier is 5. In the first example, 96 per cent of the ultimate growth in income occurs in the second period, while in the second example only 36 per cent occurs. In the second example, the third increment,  $2.44y_1$ , is just less than 50 per cent of the ultimate growth, and in the sixth period the increment is  $3.6y_1$  and only 72 per cent of the final adjustment. In the tenth period the increment is 89 per cent of the final increment.

The conclusion that the higher the marginal propensity the longer the process of adjustment is significant for income creation. Tax-financing income may operate slowly over a number of income periods. When the unemployment to be overcome is relatively large, this policy may achieve full employment only after many periods. The fact that it is not immediately successful is no sign that it may not ultimately be so.

The ultimate income creation is determined by the multiplier

and multiplicand. The simple multiplier, which is the present topic, is to be distinguished from the complex multiplier. The analysis of the former has already been set forth; the analysis of the latter is to come. The distinguishing feature of the two is that the simple multiplier is not influenced by an incremental tax. The tax structure of the economy must be composed of land and property taxes which do not impinge on the income increment.\* All the income increment of the previous period is available to individuals in the present period, and their marginal propensity to consume operates on the entire increment. The simple multiplier is in terms of the marginal propensity of individuals to consume where the influence of the incremental tax is nil. The multiplicand, which is combined with the simple multiplier, is here the result of taxation, but the nature of the taxes must be such that they do not impinge on the income increment.

#### THE COMPLEX MULTIPLIER

When the impact of the tax falls upon the income increment as well as upon the income base, which is the income level to which the increments are added, the incremental tax must appear in the multiplier or multiplicand;<sup>2</sup> otherwise the income creation obscures the operation of this process.

Proportional and progressive personal and corporate income taxes, consumption taxes, and certain property taxes, fall upon the income increment. Only the proportional income tax and the consumption taxes are discussed here, since they explain the principle without unnecessarily complicating the analysis. The incremental tax and the base tax are, of course, the same in the case of the proportional tax and consumption taxes. A 10 per cent income tax falls equally on the base and the increment, as does a like consumption tax. But what is the relation of an incremental income tax to an incremental consumption tax?

The answer has already been indicated in the previous chapter. When the same sum is collected in tax receipts, individuals readjust their outlays, in the long-run, in the same way no

\* For example, a flat tax per acre or per old building which is not based on value, or a per capita tax would not impinge on the income increment.

matter what kind of tax is imposed. The average and marginal propensities of individuals to consume operate on available income, and when the receipts from different taxes amount to the same sum, consumption is the same for all. In terms of the marginal propensity, let  $c$  be the consumption increment out of available income. In the case of the proportional income tax,  $c = mp(y - ty)$ ; and in the case of the consumption taxation,  $c = mp(y - tc)$ . When the receipts are the same sum, which is the result of the consumption tax rate being sufficiently greater than the income tax rate, and when the marginal propensity is also the same for each, the consumption increment is the same for each tax. It must be remembered that the impact of the different taxes must be upon the same persons for an equal reaction to occur.

This conclusion enables one equation for the multiplier to be written for these kinds of incremental taxes. The substitution of one tax for another may be made on the basis of equal tax receipts. The following analysis is in terms of the proportional income tax because it is the easiest to calculate and to introduce into formulas. The task of formulating income creation by means of taxation becomes immeasurably more simple.

A rule of thumb may be helpful in determining the multiplier from the marginal propensity of individuals to consume. Excluding the multiplicand ( $y_1$ ), the infinite series is  $(1 + mp + mp^2 + mp^3 + \dots + mp^n)$ . The second term produces the expression which we want because it enables us to write the multiplier. The second term is always the marginal propensity to consume multiplied by the available income which stems from the first term, plus any increments or decrements of additional spending. In the case of the simple multiplier, the second term is always equal to the marginal propensity of individuals to consume, and this multiplier may be written  $1/(1 - mp)$ .

An assumption concerning the collection and dispersal of the incremental tax receipts is necessary before the complex multiplier can be formulated. In practice, collections and dispersals of receipts are not always equal; one lags behind the other. For the present analysis it is assumed that collections equal dispersals and that they occur in the same period. Thus in the

second period, the incremental tax impinges on the available income of the period (which is the increment in the first period) and the taxes are paid and the receipts spent in the second period. There is no inequality and time lag between collection and dispersal of the incremental receipts. This assumption is relaxed in a later chapter.

The complex multiplier may be formulated by using the rule of thumb. The second term of the infinite series from which the multiplier is derived is  $[mp(1-t) + t]$ , where  $t$  is expressed as a fraction. It is to be remembered that  $y_1$  does not appear in the infinite series because it has been factored out and stands as the multiplicand. The multiplier may easily be written

$$\frac{1}{1 - [mp(1-t) + t]}$$

In this case the tax outlay has no stimulating or depressing influence on private investment. The receipts must be consumed by the recipients; but they may be devoted to social consumption, such as the expenses of armed forces, or social investment, such as bridges and buildings, which do not influence the decisions of private investors. This formula indicates that the higher the incremental tax, the larger the multiplier. If the multiplicand is unchanged, the larger the multiplier the greater is the income creation.

Chapter II demonstrated that the tax outlay may expand private investment in three ways: by the acceleration principle, as a subsidy, and by lending or investing the receipts without interest. The first two methods, however, do not cause a permanent increase in investment and they can be included in the formula only when a temporary and not the permanent multiplier is desired. In the case of the expansion in private investment which results from the government's lending or investing the receipts without interest, the increase is permanent. It can be included in the formula for the multiplier, although to do so makes the present discussion incomplete. There are gaps to be filled in by later analysis. The increment in private investment

which results from the tax outlay may be related to the tax in a strict proportion. This proportion may be called the coefficient of expansion in private investment. For example, if a tax outlay of \$2.00 causes an increase of \$1.00 in private investment, the coefficient is  $\frac{1}{2}$ . The formula for the multiplier may be written:

$$\frac{1}{1 - [mp(1 - t) + t + ft]}$$

where  $f$  is the coefficient of expansion in private investment. It is clear that this multiplier is even larger than the previous multiplier in which taxation alone was included. For brevity the three multipliers may be called the simple, the tax, and the coefficient multipliers. The last is the most powerful income creator.

The concept of the multiplier was originally developed in conjunction with government deficit spending. The deficit became the multiplicand, and the marginal propensity of individuals to consume determined the multiplier. The product of the two gave the income creation. This approach obscured, if it did not ignore, the income creating effect of taxation. The tax structure with its reliance upon personal and corporate taxes impinges on the income increment, and tax receipts increase with income creation. The question of how to handle the additional receipts may be solved in either of two ways: (a) they might be included in the marginal propensity to consume and in the multiplier; (b) they might be made a part of the multiplicand, which was to be called the income-creating expenditure of government which thus included the deficit and the additional tax receipts. The former solution tends to obscure the influence of taxation upon income creation because no distinction is made between the simple multiplier and the tax multiplier. This failure is based on another. No distinction between the individual's and the community's marginal propensity to consume was made. The latter solution likewise minimized the income-creating effect of taxation because the deficit was recognized to be the initial cause. The deficit attracted all the attention. Either approach is mathematically correct; but the emphasis was mis-

placed.\* The income created by a given deficit depends on two factors, not one: the marginal propensity of individuals to consume, and the incremental tax. The policy authority has two instruments, the deficit and taxation.

The neglect of the income-creating effect of the incremental taxes gave rise to a popular misconception. There was a common impression that the way to balance the budget was first to unbalance it. Often the acceleration principle and the multiplier were inextricably confused in such arguments. This view was never scientifically held.

#### FORMULATION OF THE METHOD OF TAXATION

The analysis has progressed to the point where formulation of income creation by means of taxation is possible. Of course, all assumptions are still operative except where there is a specific reference to the contrary. The expressions of the initial income increments which result from the different kinds of taxes can be combined as multiplicands with the multipliers. The case of the coefficient multiplier is postponed until later, since it operates more effectively when the schedule of the marginal efficiency of capital has an elasticity greater than unity. It is to be recalled that the present assumption is that of an elasticity of unity.

The simple multiplier cannot be combined with the multiplicands which have been drawn previously. The tax impinges on the income increment in the case of all three (that is, the proportional tax which all investors include in their supply price, the proportional tax which the bankers ignore, and the consumption tax). It is no doubt possible to derive the formula for the

\* Both solutions, however, indicate the same income creation. Let  $D$  stand for the deficit.

Solution  $a$  is 
$$\frac{D}{1 - [mp(1 - t) + t]} = y, \text{ the ultimate income increment.}$$

Solution  $b$  is 
$$\frac{D + ty}{1 - [mp(1 - t)]} = y.$$

Solution  $b$  may be rewritten 
$$y[1 - mp(1 - t)] - ty = D.$$

This may be rewritten  $y\{1 - [mp(1 - t) + t]\} = D$ , and the two solutions have identical formulas.

multiplicand when the land or property tax does not fall on the income increment, and when the income tax specifically exempts the increment from taxation. This formula could be combined with the simple multiplier. Nevertheless, all the determinants of the multiplicands being equal, the income created by the simple multiplier is less than the income created by the tax multiplier. Therefore the simple multiplier is omitted from the following formulation.

The previous chapter set forth the formulas for the initial income increment which are applicable in this instance; and if each expression is combined with the tax multiplier, the formula for the ultimate income increment in each situation is given. When the proportional income tax raises the supply price of all investors and their supply schedule is horizontal, the expression is  $ty(AP - mp)/(1 - mp)(1 - t)$ .<sup>\*</sup> The multiplicand contains the average propensity to consume before the imposition of the proportional tax. There is also the situation in which the banks and corporations ignore the imposition of the proportional personal income tax. In this instance, investment after the tax is the same as before the tax, as the decline of the invested saving of individuals is just offset by an equal increase in bank and corporate investments. The expression is  $tY/(1 - t)$ .

These two expressions state the limits to income creation for all those cases in which the schedules in demand for and supply of investment are less elastic than under the given assumptions. That is, in all those cases when the supply schedule is less than infinitely elastic or the demand schedule has an elasticity less than unity, the ultimate income creation falls within these limits. The lower limit is given by  $tY(AP - mp)/(1 - mp)(1 - t)$ , and the upper limit by  $tY/(1 - t)$ .

This latter formula states the ultimate income increment also for the instance of consumption taxation when there is an equal distribution in income. Of course  $t$  in this expression does not represent the rate of taxation of consumption. Instead,  $t$  is the proportional income tax which raises a sum equal to the consumption tax. When consumption is less than 100 per cent of income, which is true in an underemployment equilibrium, the

\* The multiplier in this formula is the same as the tax multiplier in the previous section, the difference being only that of the way the two are expressed.

consumption tax rate must be higher than the proportional income tax rate which raises an equal amount. In the foregoing expression  $t$  is an equivalent or substitute for a higher consumption tax. Nevertheless the expression states the ultimate income increment for consumption taxation when there is an equal distribution in income. This is the result because consumption taxation does not raise the supply price of investors and investment is unchanged, and because consumers readjust their spending.

The analysis thus far has omitted the coefficient multiplier. Let us therefore introduce it into the present case in which the schedule of the marginal efficiency of capital has an elasticity of unity. All the other assumptions are also operative. When the marginal efficiency of capital has an elasticity of unity, the total return from investments is a constant sum, no matter how large or how small investment is. The program of the government's lending or investing the tax receipts without interest makes this return a part of the earnings of private investors. Total investment is composed of a portion of loaned or invested tax receipts and a portion of private investments; but private investors receive the total return. When, however, the marginal efficiency of capital has an elasticity of unity, the total return to private investors does not increase with the increase in investment. Private investment is constant, no matter how extensive the program of lending or investing the tax receipts; because the total return, which is constant, goes to private investors in any case.

Thus the above equations express the income creation no matter how the receipts are spent, whether for social consumption or loaned to expand private investment. The impact of the tax determines the investment at the outset of the process and, although the tax receipts are loaned or invested, private investment is unchanged. If the tax is included in the supply price of all investors when the tax is imposed, the private investment is fixed. If the tax is not included, the supply price which ruled before the tax still prevails. The investment which existed before the tax continues after the tax. When the marginal efficiency of capital has an elasticity of unity, the coefficient of expansion in private investment is zero.

In this situation, the coefficient multiplier equals the tax mul



multiplier; and the question arises, how should the government spend the receipts to maximize the income creation? The answer stems from the earlier analysis of income creation by means of government deficits. In this analysis the tax receipts were included in either the multiplier or the multiplicand without changing the resulting income creation. The same outcome is demonstrable for the method of taxation when the marginal efficiency of capital has an elasticity of unity. When the receipts appear in the multiplier, the tax outlay is for consumption. This interpretation is the result of the derivation of the multiplier from the marginal propensity to consume. The multiplicand, on the other hand, has customarily represented investment. There is no logical justification for this classification, although it is fast becoming accepted practice. In deference to custom, the tax outlay appears in the multiplicand when the receipts are spent for social investment. The multiplicand is then composed of two terms: the initial income increment, which is the outcome of the higher taxation, and the incremental tax receipts. The investment item, which is one of the factors determining the initial income increment, does not increase when the initial and incremental tax receipts are loaned or invested without interest. The initial income increment is, therefore, unaltered by the policy. If the first term of the multiplicand is constant, the equations for income creation are unaltered by shifting the tax outlay from the multiplier to the multiplicand.\*

The conclusion which follows is that there is no difference in the income created between spending the receipts for consumption or social investment, when the schedule of the marginal efficiency of capital has an elasticity of unity. The reader may feel that this conclusion has been reached by unnecessary labor. The excuse is that the following analysis, which indicates when the government should spend the receipts for consumption and when invest them without interest, rests upon a clear understanding of the present case. Although it makes no difference for income creation how the receipts are spent when the mar-

\* The equation  $y = \frac{tY(AP - mp)}{(1 - mp)(1 - t)}$  is equal to  $y = \frac{tY(AP - mp) + ty}{1 - mp(1 - t)}$ . The former may be made equal to the latter by multiplying the denominator by  $y$  and transposing terms.

ginal efficiency of capital has an elasticity of unity, this conclusion is not true for the cases of greater or less elasticity.

#### THE CASE OF INELASTICITY

When the schedule of the marginal efficiency of capital has an elasticity less than unity, the larger the investment the smaller is the total return which private investors receive. Likewise, the smaller the investment the larger is the total return which investors receive. This condition influences the principle of income creation by means of taxation in two ways: first, through the reduction in investment which the impact of the tax causes when all investors include the tax in their supply price; and second, through the manner of spending the tax outlay. These influences are demonstrated by a comparison with the type of reactions in the case of an elasticity of unity in the marginal efficiency of capital.

When all investors include the tax in their supply price, the supply price increases with the tax. The less elastic the marginal efficiency of capital, the less is the reduction in investment which results from a given tax. The truth of this statement may be demonstrated by a glance at the diagram in Appendix B to Chapter III.

The foregoing discussion of income creation has assumed implicitly that the tax receipts are consumed. If the total return received by investors declines as investment expands, the lending or investing of tax receipts without interest would lower the return to private investors. The adoption of the lending or investment policy would reduce private investment. The reduction in private investment would be an offset to the ultimate income created. The conclusion is that to maximize income creation the lending or investment of the tax receipts should not be followed when the schedule of the marginal efficiency of capital has an elasticity of less than unity. The tax outlay should then be for consumption or social investment.

#### ELASTICITY GREATER THAN UNITY

When the schedule of the marginal efficiency of capital has an elasticity greater than unity, the total return to investors increases with the increase in investment, even though the mar-

ginal yield declines. As is to be expected, this case influences this method of income creation in two ways which are the direct opposites of the previous case. First, the impact of the tax reduces investment more when the elasticity is greater than unity than when it is unity. Second, the tax outlay which the government lends or invests without interest leads to a larger total return to private investors and a larger private investment. The proof of these statements is inherent in what has already been said. When the elasticity is unity the reactions in investors are intermediate. Private investment is unaltered, no matter in which of the two ways the tax outlay is used. The impact of the tax reduces investment more than in the case of inelasticity and less than in the case of elasticity.\*

When the schedule of the marginal efficiency of capital has an elasticity greater than unity, the government policy of lending and investing the tax receipts without interest expands private investment. The lending or investing, without interest, of a given tax outlay increases private investment from what it would be if this policy were not followed. Total investment is composed of the tax outlay and private investment which receives the total return. Since this increases with an increase in total investment, a larger tax outlay expands private investment.†

\* For proof of the case of elasticity see Figure 5 in Appendix B to Chapter III. Let  $S'T'$  be any schedule of the marginal efficiency of capital, the elasticity of which is greater than unity and just short of infinity;  $S'T'$  must pass through  $P$  for the same reason that  $ST$  must do so.  $MN$  must intersect  $S'T'$  to the left of its intersection with  $AB$  for every position of  $MN$  above  $PQ$ . Thus the impact of the tax reduces investment more when the elasticity of the marginal efficiency of capital is greater than unity than when it is unity. Also, the higher the tax the larger is the difference between the reduction in investment for the two cases; and the greater the elasticity, the larger is the reduction and the larger the difference.

† Let us compare the effectiveness of the policy in this situation with that of an elasticity of unity. In terms of Figure 5, Appendix B to Chapter III, when total investment is greater than  $OU$  the total return is larger when the elasticity is greater than unity.  $S'T'$  lies above  $AB$  to the right of  $P$ . If total investment is  $OU'$ , private investment is larger in the case of  $S'T'$  than in the case  $AB$ . In each instance, the total return goes to private investors; and, since the total return in the case of  $S'T'$  is larger than the total return for  $AB$  when total investment is  $OU'$ , private investment in the first case is larger than in the second case. This comparison is made on the assumption that private investors demand and receive the same supply price in the two situations. Their supply price may include or exclude the tax.

When the elasticity is greater than unity, the total return which private investors receive is larger for all cases when total investment exceeds the amount which obtains before the imposition of the tax. This is easily recognized; because to the right of the equilibrium point the elastic curve lies above the curve of unit elasticity, and the total return of the former exceeds that of the latter. Since the total return is greater, private investment is also larger in the former than in the latter for any given tax rate, because private investors receive the total return. Thus in the case of elasticity greater than unity the income creation is larger than in the case of unity. A given tax induces a larger private investment and creates a larger income increment.

The question arises, may total investment decline from the underemployment equilibrium? The answer to this question is a simple negative in those cases when the impact of the tax causes no reduction in private investment. What is the reaction in total investment when all investors include the tax in their supply price, when the supply schedule is horizontal, and when the government loans and invests the receipts without interest? Of course the impact of the tax taken in isolation may reduce investment. But when the receipts are loaned or invested without interest, total investment increases beyond the amount which obtains prior to the imposition of the tax: first, because the tax outlay is invested; and second, because private investment expands.

This conclusion may be accepted more readily after a description of how the lending and investment program works. In an underemployment equilibrium investment is a small fraction of the national income. A slight tax, which therefore does not raise the supply price of investors very much, collects in tax receipts a sum which is large relative to investment. The investment of these receipts without interest induces an amount of private investment which is not greatly below the initial amount, because the supply price of investors has not been raised very much. Hence total investment, which is the result of the lending or investing policy, is larger than the amount which exists in the underemployment equilibrium.

This description, of course, is no proof. To present such a

proof which covers all possible cases of elasticity greater than unity, it is necessary to analyze the limiting case which is most likely to be deflationary. If income creation is the result in this case, it will then follow that all other cases are income creating. If we can prove that the lending and investing of tax receipts expands total investment when the schedule is infinitely elastic, it must do so for all intermediate cases between this position and unit elasticity.

In the limiting case of infinite elasticity in the schedule of the marginal efficiency of capital, all other determinants remaining the same, the imposition of a proportional tax, no matter how slight, reduces private investment to zero. The supply curve being horizontal the tax raises the supply price above the demand curve throughout. The question is, does the lending or investing of the tax receipts make total investment in this limiting case larger than the underemployment equilibrium amount?

When all investors include the tax in their supply price, it can be written as  $j/(1-t)$ , where  $j$  is their normal supply price before the tax. With the adoption of the government's policy of lending and investing without interest to private investors, they demand this supply price. To achieve the correct supply price, the government must determine the ratio at which it will lend tax receipts to private investment. If the ratio is too high, private investors receive a return which exceeds the normal supply price including the tax, and they receive a profit. If the ratio is too low, not all the available tax receipts will be utilized. The correct ratio is the one which yields private investors the normal supply price including tax. When the correct ratio is fixed, each unit of private investment receives the marginal yield on capital and its proportional share of the same yield from the invested tax outlay. Or, to express this idea somewhat differently, each unit of private investment is coupled to invested tax receipts according to a fixed ratio and the total return goes to private investors.

This idea may be expressed in symbols. Let the marginal efficiency of capital be  $E^*$  when tax receipts and private investment compose total investment. Let  $V$  be private investment,

\* In terms of Figure 5, p. 60,  $E$  lies along  $S'T'$ , when the schedule is elastic.

$t$  the proportional tax, and  $Y$  the national income before the tax and spending program is carried out. The total return to private investors is  $E(tY + V)$ , so the rate of return for them is  $(EtY/V) + E$ . However we already know that the supply price including the tax is  $j/(1 - t)$  which private investors will demand, and the two expressions can be written in an equation:

$$\frac{EtY}{V} + E = \frac{j}{(1 - t)}$$

When the marginal efficiency of capital,  $E$ , equals  $j$ , and this marginal efficiency has an infinite elasticity, the equation boils down to  $V + tY = Y$ .\* In other words, when this condition is fulfilled, private investment and the tax outlay equal the national income, or total investment equals the national income. When  $V$  varies with  $t$ , so that private investors receive the normal supply price, total investment always equals the national income, no matter how high the tax.

This conclusion — that under the given limiting conditions total investment equals the national income prior to the imposition of the tax — proves that total investment which is the result of a lending and investing policy is larger than the underemployment equilibrium amount. In underemployment equilibrium investment cannot equal the national income because consumption would be zero, which is ridiculous and impossible. Investment must then be a fraction of the national income and in fact is a small fraction of it. Therefore as a result of a lending or investing policy total investment in this limiting case is larger than the underemployment equilibrium amount.†

\* Method: 
$$\frac{EtY}{V} + E = \frac{j}{(1 - t)} \quad \text{Let } E = j$$

Therefore  $tY(1 - t) + V - Vt = V$   
 That is to say,  $tY(1 - t) - Vt = 0$   
 $tY(1 - t) = Vt$   
 $Y - tY = V$

† In terms of Figure 5 when  $S'T'$  is infinitely elastic and lies along  $QP$  extended, total investment ( $OU'$ ) must be larger than  $OU$ , the equilibrium investment before the tax. This conclusion must be true because  $OU$  is only a fraction of the national income before the tax, and total investment after the tax and spending program is equal to the national income.

When the schedule of the marginal efficiency of capital has a negative slope, it is equally clear that the marginal yield, instead of being horizontal, cannot be higher than the normal supply price before the tax. If it were, private investors would receive a profit and try to expand investment. The marginal efficiency of capital would be pushed by the policy below the normal supply price,  $j$ , and total investment must exceed the underemployment equilibrium amount. Since  $j$  is the normal supply price before the tax and is higher than  $E$ , then investment before the tax must be less than total investment after the adoption of the government's lending and investing the receipts without interest.\*

Although the argument began with the case of infinite elasticity, it is necessary to indicate that this case is impossible. The schedule of the marginal efficiency of capital must have a negative slope. Otherwise there is no inherent explanation why the economy is in a prolonged unemployment. As long as the marginal efficiency of capital did not fall below the normal supply price, investors would expand investment to their advantage. For the underemployment equilibrium amount of investment to be stable, the schedule of the marginal efficiency of capital must have a negative slope at this point.

The argument has now reached the position where a general conclusion is possible. When any given tax outlay is loaned or invested without interest, private investment is larger the greater the elasticity in the schedule of the marginal efficiency of capital. If the application of the principle creates income in the case of unit elasticity, the income created by a given tax must be even greater when the elasticity is higher.

The analysis has now covered every degree of elasticity in both the demand and supply schedules of investment, and has found that income creation results from the proportional tax when the tax receipts are properly spent. To maximize the income created by a given tax, the tax outlay must be devoted to consumption when the schedule of the marginal efficiency of

\* In terms of Figure 5  $OU$  must be less than total investment which results from the policy, because the marginal efficiency of capital which moves down along  $S'T'$  must be less than  $UP$ .

capital has an elasticity less than unity, while the tax outlay must be loaned and invested without interest when the elasticity is greater than unity. Thus this policy is income creating in every case. Of course the limiting assumptions under which the analysis has proceeded still restrict the scope of this conclusion.

#### THE FORMULATION OF THE ELASTIC CASE

Thus far, the analysis of the case in which the schedule of the marginal efficiency of capital has had an elasticity greater than unity has been confined to the initial income increment. Once the question of the actuality of the initial income increment under these conditions is answered in the affirmative, one can proceed to the ultimate income creation. With a positive multiplicand, the ultimate income increment depends upon the multiplier. If the proportional tax is so drawn that the tax does not impinge on the income increment, the simple multiplier is used. If, as is the more likely situation, the tax impinges on the income increment and the incremental tax outlay is for consumption, the tax multiplier must be used; and the ultimate income creation is larger as the tax multiplier is more powerful. If, on the other hand, the policy authority desires to create the maximum income, the incremental tax receipts may be employed to expand private investment in the same way that the initial tax outlay was used. The government may lend and invest the incremental tax receipts without interest to expand private investment. In this situation, the coefficient multiplier must be employed. The ultimate income creation which would thus result is the largest of the three cases.

It is now possible to formulate precisely the income creation in the case where the government loans and invests the receipts to expand private investment. The formulation of the several varieties of this case makes possible a comparison of the income creation in this case with that of other cases. In addition it demonstrates which of the several varieties in this case creates the largest ultimate income increment.

In this situation in which the schedule of the marginal efficiency of capital has an elasticity greater than unity, the lending and investing of the receipts expand private investment



beyond what it is in the case of unit elasticity. This is the conclusion in the earlier discussion. We know, in the case of the elasticity of unity, how private investment reacts to the proportional income tax when all investors raise their supply price by the amount of the tax, and when the supply schedule of investment is horizontal. The expression for private investment in this situation is  $(1 - t)(Y - APY)$ . This item can be used as a point of reference to indicate private investment when the elasticity in the schedule of the marginal efficiency of capital is greater than unity. The lending and investing of the receipts raise private investment above  $(1 - t)(Y - APY)$ . The increase can be definitely designated, although it may differ from variety to variety.

There is the situation in which just the initial tax receipts are loaned and invested to expand private investment. Let  $K$  be the excess of private investment when the schedule is more elastic than when it has an elasticity of unity. That is, for every level of taxes there is a unique volume of private investment when the receipts are loaned and invested to encourage private investors for every position of an elastic schedule. This unique level exceeds that in the case of an elasticity of unity by the amount  $K$ . It is now possible to formulate the initial income increment or the multiplicand for every position of elasticity greater than unity.  $K$  is added to the expression of the multiplicand in the case of an elasticity of unity. The formula becomes  $tY(AP - mp) + K$ .

If the elasticity in the schedule of the marginal efficiency of capital is given,  $K$  is a function of  $t$ . The higher  $t$ , the larger are the tax receipts, if  $Y$  is given. For every level in  $t$  and in receipts there is a unique ratio between the government outlay and private investment, which at the same time maximizes private investment and yields a return which covers the supply price of investors. Hence  $K$  is determined for every level in  $t$ , other things being unchanged.

There follows from the determination of the initial income increment the expression for the ultimate income increment. There are three possibilities: (A) one in which the proportional tax does not impinge upon the income increment and is confined

to the income base, and (B) and (C) in which the tax does fall upon the base and increment alike. The simple multiplier is applicable in the former; and the tax or coefficient multiplier in B and C. The expression for the ultimate income increment in the case of A becomes  $[tY(AP - mp) + K]/(1 - mp)$ . The expression for the ultimate income increment in the case of B when the incremental tax receipts are devoted to consumption is  $[tY(AP - mp) + K]/(1 - mp)(1 - t)$ . It is clear that B is larger than A because although the multiplicands are the same for each the multiplier of B is larger than that of A.

There remains the instance C, in which both the initial tax receipts and the incremental receipts are loaned and invested to expand private investment. This instance involves further analysis because the multiplicand differs from that in the preceding situations. The initial expansion in private investment is less than that in the previous instances because the ratio of the government outlay to private investment is smaller. When just the initial tax receipts are loaned and invested, the ratio is such that private investors receive a gross return sufficient to meet the tax. When the incremental tax receipts are added, the ratio must be raised. Total investment, that is private investment plus tax receipts, is larger because of the addition of the incremental receipts. The marginal yield falls because of the expansion in total investment. The ratio of government outlay to private investment must be raised in order to give private investors the same gross return. The initial expansion in private investment per dollar of invested tax receipts is less because the ratio is higher. Therefore, the initial expansion in private investment, which is the result of lending and investing the initial tax receipts, is less than  $K$  when the incremental tax receipts are also used to expand private investment in the same ratio as the initial receipts. When this is the situation, let  $k$  be the excess of the initial private investment when the schedule is elastic over that when its elasticity is unity.  $K$  is larger than  $k$  because the ratio of the initial tax outlay to private investment is smaller for the former than for the latter, and the initial expansion in private investment is therefore larger for the former than for the latter.

It is now possible to write the expression for the ultimate income increment in this instance. In place of  $K$  we write  $k$ , and instead of the simple multiplier or the tax multiplier we use the coefficient multiplier. The expression becomes

$$\frac{tY(AP - mp) + k}{1 - [mp(1 - t) + t + ft]}$$

There at once arises the question of the size of the ultimate income increment in this instance relative to the previous two instances. Since  $k$  is smaller than  $K$  the multiplicand of the last expression is smaller than the multiplicand in each of the other expressions. On the other hand, the coefficient multiplier is greater than either the simple or the tax multiplier. Does the increase in the coefficient multiplier more than offset the fact that the multiplicand in this instance is less than either of the other multiplicands? The answer to this question would seem to be in the affirmative. The reason is that private investment is larger when all the tax receipts are loaned and invested to expand private investment than when just the initial tax receipts are employed in this manner. When the incremental tax receipts are consumed, there is no permanent encouragement to private investors; and in this instance just the initial receipts, ( $tY$ ), are used to expand private investment. When the coefficient multiplier is applicable, however, both the initial and the incremental tax receipts are loaned and invested to expand private investment. The expression  $t(Y + y)$  is larger than  $tY$ . Since, for a given level in  $t$ , private investment is larger when all the tax receipts are used as an encouragement than when they are not, consumption is also larger. Larger increments in consumption and in private investment would result in a larger ultimate income increment even if the tax increment itself were not larger. Of course, the tax increment is larger in this instance because the ultimate income increment is larger. There is mutual interaction resulting in a larger ultimate income increment. The lending and investing of all the tax receipts is the most powerful method of income creation of these three instances.

It is well to end this chapter with a general statement of just where this discussion leaves the argument. In the course of

following the detailed formulation the reader may have lost track of the general theme. At the end of the previous chapter there was a large gap in the method of creating income by taxation which has now been filled. That is, the proportional income tax may be income creating, if spent in the proper way, in all degrees of elasticity in the demand schedule of investment. The formulation in this chapter has been limited, however, to the limiting case of infinite elasticity in the supply schedule. This restriction is eliminated in the next chapter.

## APPENDIX A

### TWO APPROACHES

When the schedule of the marginal efficiency of capital has an elasticity greater than unity, and when the policy authority desires to create the maximum income increment, the policy of lending and investing the tax receipts must be carried on continually and all the tax receipts be used to expand private investment. As income and incremental tax receipts increase, the receipts are loaned and invested, and private investment expands. This expansion continues until investors receive no more than their supply price. Their return is determined by the marginal efficiency of capital, and by the ratio of tax outlay to private investment. When the policy authority determines the correct ratio, all tax receipts are loaned or invested, and investors receive just their supply price<sup>3</sup> in the ultimate equilibrium.

If the ratio is too low, private investors will not find it profitable to put all the tax receipts to use. The marginal efficiency of capital will not cover their supply price "as long as the same ratio is maintained." Of course the tax receipts cannot be left unspent without being absolutely deflationary; the policy authority must spend them for consumption or social investment. This method of spending, however, is not achieving the maximum income creation. On the other hand, if the ratio is too high the ultimate increase in income may be reached and income become constant before the marginal efficiency of capital has fallen to the supply price of investors. They would receive a profit over and above their supply price, which would be higher at the outset of the policy but which would never entirely disappear. The existence of a profit after the adjustment period when income stops rising is a sign that the policy authority is not achieving the maximum income creation from the given tax system. The existence of profit beyond the adjustment period means that private investors wish to

borrow tax receipts which are not available. Through the setting of a lower ratio, larger private investment per unit of tax outlay results and a greater income creation is achieved.<sup>4</sup>

The problem before the policy authority is not solved merely by its knowing the correct ratio which will leave neither profit over investors' supply price nor unborrowed tax receipts. There are two approaches which are open to the policy authority for achieving the correct ultimate ratio between the tax outlay and private investment. First, the correct ultimate ratio may be fixed at the initiation of the policy. Second, the ratio may be fixed at the outset so that investors do not receive a profit, but this ratio which is below the ultimate position, must be raised through a series of sets to the correct figure. Both approaches center attention upon the adjustment period during which income is rising.

The first approach introduces profits which are at the outset high and then diminish gradually through the readjustment period until they disappear in the ultimate equilibrium. This must be the behavior of profits, because the ratio is determined for the lower position of the marginal efficiency of capital to which it falls as total investment expands. The introduction of a slowly diminishing profit means that the early bird catches a larger worm. The initial expansion in private investment is likely to be sudden and not sustained. The unevenness in the expansion of private investment may cause repercussions through the acceleration principle. When the policy authority follows this approach, the course of income creation during the adjustment period toward the ultimate increment takes on an uncertainty and an irregularity, although the ultimate creation is not in question.

The second approach avoids the difficulty of the introduction of profits. The policy authority determines the ratio at which it lends tax receipts for private investment according to the available tax outlay and investors' supply price. This is the initial income increment and, as income creation proceeds, the government receives incremental tax receipts. The policy authority may now raise the ratio to expand private investment, or wait before doing so until the initial income creation has brought in all the incremental tax receipts. Of course the receipts must be spent either for consumption or for social investment. There would be fewer, although larger, changes in the ratio if the latter course were followed than if it were raised in every income period as incremental tax receipts were paid in. In general, the less frequent the changes in the ratio the better. Private

investors are likely to hesitate to put up funds today if they believe that the same sum will obtain a larger tax outlay tomorrow. Furthermore, the early investor, who borrows receipts at a low ratio when the marginal efficiency of capital is high, suffers a loss when the marginal yield falls. The second approach errs on the side of over-caution. This approach may not encourage private investors sufficiently and income creation may lag. It might even fail to start.

In practice the policy authority may have to follow an intermediate course between these two approaches. By introducing a small profit at the outset of the policy the authority insures the initial income creation, and if the ratio has to be raised in the future the needed change may be only slight. The earliest private investors who took advantage of the lending program have a margin of security. In practice the policy authority can only guess at the ultimate equilibrium ratio, for it lacks the knowledge which is here provided by hypothesis. It may have to alter the ratio merely because it made a mistake. If, however, the error is on the side of fixing too high a ratio, there is less danger of the policy failing to create income and more danger that the income creation may be too rapid.

## APPENDIX B

### THE SCHEDULE OF THE MARGINAL EFFICIENCY OF CAPITAL IN A MODERN ECONOMY

Thus far, the analysis has taken for granted a knowledge of the schedule of the marginal efficiency of capital. A brief explanation of this schedule is, perhaps, long overdue, as it is such an important determinant of income creation.<sup>5</sup> To maximize the income creation which results from a given tax, the policy authority must spend the tax receipts for consumption when the schedule has an elasticity less than unity and lend and invest them without interest when the elasticity is greater than unity. What are the elements which determine the elasticity of the schedule of the marginal efficiency of capital? <sup>6</sup>

There are several elements: (*a*) the marginal value product of capital in the sense of static theory; (*b*) the wider adoption of capital-using techniques which are already known; (*c*) the discovery of new techniques which are induced by the fall in the supply price of investors; and (*d*) the increase in consumer borrowing which is due to the fall of the supply price of investors. There are absent from this list three types of demand for investment which are ele-

ments in the real world. First, the demand for industrial investment which is the result of an increase in demand for output; second, the increase in demand for consumer investment which is the result of an increase in income; and, third, the demand of innovators who are introducing a new technique not heretofore known. These demands for investment do not appear in the schedule because they are not a function of the supply price of investors. The first two depend upon the acceleration principle and an increase in income, the third is the outcome of the discontinuous process of invention, discovery, and innovation. The third must be eliminated from the analysis because our problem concerns an underemployment equilibrium in which new techniques are relatively insufficient. Were they abundant, prolonged unemployment would not exist. The first two are eliminated by hypothesis from the present discussion.

Let us examine each of these elements which determine the elasticity of the marginal efficiency of capital. The purpose of the inquiry is to discover whether the wealthy and advanced capitalistic economy has a more elastic schedule than the poor and noncapitalistic economy. Some economists maintain that, as an economy becomes mature and the roundabout process of capitalist production is extended, investment opportunities dry up. If this view is correct the schedule is likely to be inelastic; the policy authority should not lend and invest the tax receipts without interest but instead devote them to consumption. The present inquiry has, therefore, direct bearing upon the power of taxation to create income.

The first element is the marginal value-product. This is the result of multiplying the marginal physical product and the marginal revenue and depends upon two conditions: (a) the law of diminishing productivity in physical terms, and (b) the degree and extent of monopoly. The latter cannot be discussed at this point, although the assumption of pure competition is not necessary. The degree and extent of monopoly are merely assumed to remain constant.\*

Many textbooks teach that the marginal physical product of capital, or of saving and investment, depends upon: (a) the technique of production; (b) the efficiency of labor; (c) the fertility of the land and the abundance of natural resources; and (d) the relative supplies of the agents of production. No one can assert that the technique of production in the modern economy is undeveloped and unscientific; it is at times almost superhuman and miraculous. Labor in the modern economy is highly skilled and trained. Contrary to

\* See Chapter VI, p. 130.

popular belief, many unions encourage the workers to improve their efficiency. In the United States the land is still highly productive and, although there are areas in which the soil has lost its fertility, they form only a small proportion of the productive land. The natural resources of this country are not as accessible and plentiful as they were a century ago. Nevertheless this country is one of the few nations richly endowed with natural resources. The modern economy cannot be found lacking in three at least of the four determinants of the physical productivity of capital.

The fourth cannot be handled in strict classical form, for full employment of all agents is there a necessary condition. This situation is obviously incorrect, for the present analysis starts from the hypothesis of prolonged unemployment. We can, however, overcome the difficulty by approaching the problem from the point of view of the individual firm which is applying units of additional investment. Even during prolonged unemployment there are firms that undertake investment. Each unit of investment may be composed of payments to the different agents of production in various proportions. The physical output of the firm increases even though the technique of production remains unchanged. The old investment of the firm is increased by another unit; and the physical output increases, but at a diminishing rate. Where the technique of production is highly developed, labor efficient, and land and natural resources relatively productive, the decline of the physical output which follows an increase in investment is unlikely to be great. A fall in the supply price of investment enables the firm to expand its output and the expansion is likely to be not much smaller than the increase which resulted from the previous input of investment.\*

The second determinant of the elasticity of the marginal efficiency of capital is the adoption of existing techniques of production.<sup>7</sup> That is, the fall of the supply price of investment makes the use of additional capital profitable, but, instead of increasing the existing capital of the firm by another unit of the same kind, a unit which is new to the technique of the firm but not new to the methods of the economy is added. For example, a large decline in the rate of interest might make profitable the electrification of the existing steam railroads. Electric roads are not new to the economy but they would be a new investment for the steam railroads.

\* The existence of general unemployment does not damage the argument because the analysis is not concerned with the distribution of the relative shares of income.



In the modern economy, many alternative methods of production compete side by side. When a fall in the supply price of investment induces a firm to expand its capacity, the input of capital is much more likely to be an improvement rather than an increment of the old type. An addition of the type which is new to the firm is likely to be more productive than an increase of the old. The directors would not advocate the electrification of the railroad if additional steam engines of the old model were expected to yield more profit. The fact that the modern economy exhibits many competing methods of production means that additional investment is usually new investment for the firm.

Let us compare the marginal productivity of old investment with that of this limited form of new investment. In terms of the physical productivity of capital, the output which results from an additional unit of old investment is not likely to be much less in the modern economy than the output from the previous unit. If the input of another unit of capital takes the form of a more productive kind of capital, the fall in the physical product is less than if the addition is of the old type. The conclusion follows that the more rival methods of production there are, the more elastic is the marginal efficiency of capital.

The third determinant is induced innovation.<sup>8</sup> An innovation is a method of production which is new to the economy and has been only experimentally applied. In this context it must be capital using, although all innovations are by no means of this type. In any period, the innovations may be arranged in a schedule ranging from the highly profitable through the barely profitable to the unprofitable. During prolonged unemployment there is a relative insufficiency of the profitable innovations, and yet there may be many innovations which are *just* unprofitable. A decline in the supply price of investors induces entrepreneurs to undertake innovations which otherwise would not be tried. These induced innovations are of two kinds. First, entirely new and untried innovations are launched because of the fall in the supply price of investors, and because entrepreneurs foresee a profit and are induced to undertake the investment. Second, the introduction of the profitable innovations is speeded up. Firms which would not adopt the innovation at the existing supply price are induced to try the innovation after the supply price has fallen. In the former case, unprofitable innovations are made profitable, and, in the latter, the introduction and adoption of innovations which are already being tried is made at a faster rate. A comparison between the

concepts of innovation and of new investment which is a novelty to the firm but not to the economy is advisable, since there may be some confusion on the subject. Innovations are improved methods of production, new goods, cheaper sources of raw materials, which are not a part of the economic process and which have been tested only experimentally. The economy is innovating when the investment which is necessary for the new production is taking place. New firms are formed beside the old ones. A few old but progressive firms may adopt the innovation. The entrepreneurs forecast a profit from the innovation. On the other hand, the new investment which is a novelty to the firm but not to the economy has been tested and tried in competition with rival methods. In this case the investment of the firm increases rather than the number of firms. There is not the risk of loss and uncertainty of success, nor the need of an entrepreneur as in innovations. The distinction between the two is perhaps more of degree than of kind, but such a distinction is helpful in an analysis of the elasticity of the marginal efficiency of capital.

Within the economy this twofold form of investment occurs continually, and both types are in general independent. Innovations may proceed in one sector while investment in capital goods new to the firms takes place through the rest of the economy. A helicopter industry might develop while improved steam engines were being adopted by the railroads and the automobile companies were improving their models. The two occur simultaneously. This means that a decline in the supply price of investors induces an expansion of both types. The increase in investment is larger when both types are present than when only one is operative. The presence of both makes the marginal efficiency of capital more elastic.

In the modern economy there are always innovations which stand on the borderline of profitability. Even during prolonged unemployment there are improvements and inventions which stand on the untried fringe. Certainly the modern economy, with its emphasis on scientific techniques and experimental laboratories, does not lack new things to try. Rather, the absence of the prospect of profit from these ventures prevents their being undertaken. A reduction in the supply price of capital makes the fringe of unprofitable innovations profitable.

The fourth and final determinant of the elasticity of the marginal efficiency of capital is the increase in consumer investment which results from a decline in the supply price of investment. In the consumption pattern of the modern economy, there is a large propor-

tion of expensive and durable consumers' goods. They are acquired through saving or borrowing funds, and the supply price of investors is an item in their cost. A decline in their cost induces consumers to purchase these goods which are a form of investment. This type is an addition to the foregoing three determinants and not a substitute for them. It accounts for another item in the increase in investment which results from a fall in the supply price. Consumer investment, which is a more important item in the modern economy than formerly, increases the elasticity of the marginal efficiency of capital.

The analysis has thus far been in terms of the elasticity of the schedule,<sup>9</sup> whether it is greater or less than unity. In reality the schedule may take many shapes of varying elasticity. During prolonged unemployment the schedule must have a negative slope at the point of the equilibrium rate of interest. If this were not so and the schedule were infinitely elastic, the equilibrium could not be stable. Additional investment could be placed with profit under the present assumptions, for there is no lack of investable funds at the equilibrium rate. The economy could not remain indefinitely in prolonged unemployment. Although the schedule has a negative slope at the equilibrium rate of interest, it may become more or less elastic as it continues to the right.

When, below the equilibrium rate of interest, there is a change in the elasticity of the schedule from elastic to inelastic, or vice versa, the policy authority must gear the spending of the tax receipts accordingly. When the schedule is at first elastic and then changes to inelastic after investment has grown, the spending of the tax outlay must be changed at this point. At first the authority should lend and invest receipts without interest, but, when investment has increased to the point where the schedule becomes inelastic, the incremental tax receipts should be spent for consumption. When the schedule is at first inelastic and then elastic at lower interest rates, the lending and investing of the tax receipts without interest must be followed throughout. The policy is at first not as effective as it becomes when investment has expanded to the change in elasticity. An extreme example may make this analysis clear.

Let the underemployment equilibrium rate of interest be 2 per cent and let the marginal efficiency of capital be infinitely elastic at 1 per cent. What income creation is possible? To answer this question additional data are necessary. Let the marginal propensity of individuals to consume be 0.8, the tax be 0.1, and let us answer the question for the two cases: (a) in which all investors include the tax

in their supply price, and (*b*) in which the tax is ignored by the banks.

In case *a*, the 0.1 tax raises the supply price to 2.2 and, if the correct ratio of tax receipts to private investment is fixed, the ratio is 1.2 to 1. The coefficient of expansion of private investment, which is the reciprocal of this ratio, is 0.83. The coefficient multiplier is now applicable and is 10.

In case *b*, the ratio is 1, the coefficient 1, and the coefficient multiplier 12.5.

Let us work out the example when the tax is doubled, 0.2. In case *a*, the ratio is 1.5, the coefficient 0.66, and the coefficient multiplier 33. In the case of *b*, the ratio is 1, the coefficient is 1, and the coefficient multiplier is infinity. If, in case *a*, the tax is raised to 0.3, the coefficient multiplier is also infinity. Under the assumed conditions, income creation would continue indefinitely.

Whenever the coefficient multiplier is infinity, the increase in income is endless, although it may be slow. This infinite process is possible only because the marginal efficiency of capital has an infinite elasticity. Notice that such a growth in income is possible even though the rate of interest at which the schedule is infinitely elastic is below, even far below, the equilibrium rate. Nevertheless, the income increase may not be infinite at a low tax, although it will be so at a sufficiently high tax.

## CHAPTER V

### BROADENING THE SCOPE

THE ANALYSIS IN THE PREVIOUS CHAPTER has reached the conclusion that the proportional personal income tax may be income creating in all shapes of the demand curve of investment. This argument does not establish a principle, because the income-creating effect of other taxes must be analyzed. Furthermore there are other combinations in the demand and supply curves of investment which also must be discussed. What remains for analysis is the scope of the ultimate income creation when there are different taxes and different reactions of investors. When this is accomplished, the method will become more inclusive and more general and will be confined less by specific assumptions.

As the scope of the analysis is broadened into a general principle, it will become apparent that the initial argument began with the case in which the ultimate income creation is the smallest possible under the assumptions. Therefore we can proceed with confidence to those in which taxation is a more powerful income creator. The analysis in this chapter combines that in the previous two and rounds out the discussion.

#### THE SUPPLY SCHEDULE WITH A POSITIVE SLOPE

The analysis of the previous chapter is in terms of a horizontal supply schedule of saving and investment. Furthermore, investors raise their supply price by the full amount of the tax. There is the possibility, if not a probability, that the supply schedule of saving and investment is not horizontal and has a positive slope. In this situation, the decline in investment which results from the imposition of any proportional income tax is less than that when the supply schedule is horizontal. A given proportional tax raises each position or point along the schedule by the same percentage. A 50 per cent tax doubles each supply price. When the supply schedule is horizontal, a given tax raises

each price by the same amount, and the new schedule is also horizontal, lying above the old by an equal amount throughout its entire range. When the schedule has a positive slope a given tax raises each price by the same percentage, but this is by a different absolute amount. The slope of the new schedule is steeper than that of the old. A comparison of the two schedules, the one horizontal, the other sloped, which are the result of the imposition of a given tax shows that they are equal at only the old equilibrium price, and that at all supply prices less than this the horizontal schedule lies above the sloped one. Therefore, the decline in investment which results from the tax is greater for the horizontal than the positively sloped schedule.\*

This conclusion is important for income creation by means of taxation. It is generally believed that the supply schedule of saving and investment out of a given income has a positive slope.<sup>1</sup> The rich and well-to-do may save with little regard to the rate of interest. Since these groups provide the bulk of individual saving, the schedule may have a rather steep incline. This means that the income creation is larger. The formulation of the income creation in the instances when the demand schedule has an elasticity greater than unity is postponed for convenience to the next topic.

#### THE PERSONAL PROPORTIONAL INCOME TAX WHICH CORPORATIONS IGNORE

In the previous chapter all investors raise their supply price sufficiently to cover the proportional income tax.<sup>2</sup> It is there assumed implicitly that the reactions of bankers, directors of industrial corporations, and individual savers to the imposition of the tax are the same. This assumption is by no means necessarily true. The proportional personal income tax may be entirely ignored by the directors of banks and other corporate investors even if the net earnings of corporations due the stockholders are subject to tax as a part of personal income. The managers and active directors of business organizations often govern their decisions according to the interests of the organi-

\* See Appendix B to Chapter III.

zation as a whole, or their personal interests as managers, with little consideration for the earnings of stockholders. The continued existence of the organization and their active participation in it are matters which vitally concern the managers. It is therefore necessary to analyze the operation of creating income by taxation under the assumption that all investors other than individuals ignore the tax.

The schedule of the marginal efficiency of capital, which is here assumed to be elastic, is constant, although the supply of saving and investment undergoes some readjustment. The relative share of individual saving decreases, while that of corporations and banks increases. Individuals raise their supply price by the amount of the tax, and they reduce their investment until the yield just covers their higher price. Since their supply schedule has a positive slope, they do not reduce their investment to zero. Since, however, banks and corporations are willing to invest at the old equilibrium rate of interest, and since their supply is infinitely elastic in underemployment equilibrium, they expand their investment by the same amount by which individuals reduce theirs. The total of saving and investment is unchanged.

In this situation, when the schedule of the marginal efficiency of capital has an elasticity greater than unity, and when the tax receipts are loaned and invested to expand private investment, the formulation of the ultimate income creation follows the same technique as that in the previous chapter. However, the banks and other corporate investors are willing to invest at the underemployment equilibrium rate of interest. The ratio of the government outlay to private investment has to yield a return which is only just equal to this equilibrium rate but no more. In the previous instances of the lending and investing of the receipts, this ratio had to be high enough to yield a return to private investors which compensated them for the tax on this income. Then the increase in private investment which resulted from this program was designated  $K$ , when just the initial tax receipts were thus employed, and  $k$  when all the receipts, both initial and incremental, were used to expand private investment.

These symbols are not applicable in this situation because

the ratio need not be so high. Investors accept the old equilibrium rate. The ratio of the government outlay to private investment may be lowered. Thus a given government outlay,  $tY$ , expands private investment more per unit of outlay than when the ratio has to be high enough to cover the tax. In the situation when the ratio is just sufficient to yield the old equilibrium rate, the expansion in private investment, which is the result of the program, must be the excess over  $(Y - APY)$ . If the program is not attempted, investment is  $(Y - APY)$ . Hence, any increase in private investment over and above the underemployment equilibrium amount may be attributed to the lending and investing of the receipts when the program is adopted. Let this increase be  $K'$  when just the initial tax receipts are so used. Let  $k'$  designate the increase in private investment when both the initial and incremental tax receipts are loaned and invested to expand private investment.  $K'$  is larger than  $k'$ , because the marginal efficiency of capital is higher than when all the receipts are invested.

Of course the simple and tax multipliers may be used with  $K'$ . The coefficient multiplier, which must be altered in this situation, must be used with  $k'$  in formulating the ultimate income increment. When the ratio of the government outlay to private investment must yield a return to private investors sufficient to cover the tax, the coefficient multiplier is written

$$\frac{1}{1 - [mp(1 - t) + t + ft]}$$

In this expression,  $f$  is the reciprocal of the ratio. On the other hand, when the ratio need not cover the tax and need yield only the old equilibrium rate to private investors, the ratio is lower. Hence the reciprocal of the ratio is higher. In other words, the expansion in private investment, which is the result of lending and investing the incremental tax receipts, is greater because the ratio of government outlay to private investment is lower. Let  $f'$  indicate this fact and be substituted for  $f$  in the expression for the coefficient multiplier.

The ultimate income increments may be written

$$\frac{tY(1 - mp) + K'}{(1 - mp)(1 - t)} \text{ and } \frac{tY(1 - mp) + k'}{1 - [mp(1 - t) + t + f't]}$$



Notice that the first term in each of the multiplicands is  $tY(1 - mp)$  instead of  $tY(AP - mp)$ . The latter is not applicable as it was in the previous chapter because now the point of reference is the case in which private investment is not reduced by the tax. That is, at the end of Chapter III, we saw that when banks and corporations offset the decline in individual investment, the initial income increment is  $tY(1 - mp)$ . Hence this expression must be the initial term in the multiplicands which are under discussion.

A moment's reflection will indicate that taxation is more powerful in this situation than under any of the previous conditions. Here the tax does not cause a decline in investment when the receipts are consumed. This is the correct result regardless of the elasticity in the schedule of the marginal efficiency of capital. It may be infinitely elastic, or less so. Likewise, if the marginal efficiency has an elasticity greater than unity, the lending and investing of the tax receipts expands private investment more, because the supply price of the corporate investors is not raised by the tax. The income creation is larger because the expansion in private investment is greater.\*

This analysis is important in yet another respect. It estab-

\* A brief glance at the formulas will verify these observations. When the tax receipts are loaned and invested to expand private investment, the comparison of the formulas indicates that when banks and corporations ignore the tax, the income creation is at its maximum.  $K'$  is larger than  $K$ ,  $k'$  and  $f'$  are larger than  $k$  and  $f$  respectively. When the supply schedule is horizontal and the tax raises the supply price, the expressions are

$$\frac{tY(AP - mp) + K}{(1 - mp)(1 - t)}$$

and

$$\frac{tY(AP - mp) + k}{1 - [mp(1 - t) + t + f't]}$$

When the tax is ignored, the expressions are

$$\frac{tY(1 - mp) + K'}{(1 - mp)(1 - t)}$$

and

$$\frac{tY(1 - mp) + k'}{1 - [mp(1 - t) + t + f't]}$$

The last two expressions are the largest of all.

lishes the upper and lower limits to income creation when the lending and investing policy is carried out under different positions of the supply schedule which varies from the horizontal to the vertical. As the supply schedule becomes less elastic the impact of the tax reduces investment less. In the case of absolute inelasticity there is no decline in private investment. Hence the lending and investing policy causes an expansion in private investment beyond the underemployment equilibrium amount. The expressions in which  $K'$  and  $k'$  appear present the ultimate income creation in this limiting case. The lower limit, of course, is determined by the elasticity in the supply curve being infinite; and the formulas in the last topic of the previous chapter are applicable (see the previous footnote). Thus the ultimate income increments in all other cases of the elasticity in the supply schedule lie within these limits.

#### CONSUMPTION TAXES

Although this essay has already touched on the subject of consumption taxes, it is necessary to reopen and review the discussion, because the public in general and a good number of economists in particular regard consumption taxation as deflationary. Clarity in the argument has been sacrificed for the sake of rapid progress.

The phrase "consumption taxes," or "consumption taxation," as used in this book, refers to all taxes which are based upon consumers' goods and all taxes which are passed on to consumers in higher prices. Clearly all retail sales taxes, amusement taxes upon theater tickets, night clubs, concerts, and other entertainments, excise taxes on tobacco, drinks, and gasoline, and personal property taxes on such goods as autos, houses, house furnishings, jewels, and other personal belongings, are included in the definition. Other taxes which are more in the nature of a hidden levy also come within the meaning of this phrase. General property taxes and import duties for revenue, which are passed on to consumers in higher prices and which consumers ultimately pay out of income, are a part of consumption taxes. All forms of license fees and levies which producers charge to consumers likewise fall in this category. Pay-roll

taxes, insofar as they are paid by consumers in higher prices, fall within the definition; insofar as they are passed back to the workers in lower wages, they are an income tax collected at the source.

In contrast to this general and all-inclusive meaning, consumption taxation is often used to refer to taxes which fall only on the low-income groups. A retail sales tax which is imposed upon the goods consumed only by the poor is a consumption tax. The phrase is, however, often applied to a general sales tax which falls on all kinds of consumers' goods with the inference that only the poor and lowest income group pay them. A pay-roll tax is frequently called a consumption tax because it falls upon the wage earners. The conclusion may be drawn that because these taxes are paid by the poor, they are deflationary. This conclusion, as it stands, is of course wrong. During unemployment the question of its income creation or destruction turns on how the government spends the receipts. When the receipts are consumed, there is neither income creation nor destruction, only a transfer of consumption from one low-income group to another. When the taxes are hoarded in a reserve fund, as may be in the case of unemployment and old age reserves, the result is income destruction. When the tax receipts are used to expand private investment during an unemployment equilibrium, there is income creation. The result of this kind of tax is unquestionably to reduce the consumption of the poor; but it is incorrect to conclude that national income therefore falls. Furthermore, the fact that the taxes are based upon consumers' goods, as in the retail sales tax and excise tax, is not the cause of the reduction in consumption by taxpayers. The true cause is the fact that they fall on low incomes which must be entirely consumed. No matter what the tax base, whether it is income, the right to vote, or even to live, the poor must pay it out of their consumption. As long as the sum which the taxpayer owes the government is constant for the various taxes, the tax base is unimportant except for the practical difficulties of administration.

In the broader meaning of the phrase "consumption taxation," as used in this essay, the taxes fall upon all income groups according to their consumption. Since the middle- and

top-income groups consume more per capita than the poor, their tax per capita is larger. Of course, consumption taxes fall upon the poor who do not save; but they also fall upon the upper groups who do save, just as an all-inclusive income tax would impinge upon the poor and rich simultaneously.

The reaction of taxpayers to consumption taxes is, of course, to regard the payments as a reduction in available income. In the long run they reduce their saving-income ratio, where it is possible, sufficiently so that the total spending for consumption, which includes the taxes, yields the same consumption out of available income as if the same tax payment had been based upon income. In other words, in the long run, taxpayers maximize their satisfactions from a given level in available income by diminishing the ratio of their saving to their income.

It is not true, for the long run, as some authors<sup>3</sup> suggest, that consumption taxation stimulates saving. They argue that because individuals have to pay taxes on consumers' goods their desire to save increases. This is an irrational reaction unless the consumption taxation is believed to be temporary. A given income would then yield a larger satisfaction by saving more while the taxes are in effect, and after the taxes have been removed the accumulated saving will purchase more consumers' goods. When, however, the increase in taxes is known to be permanent, an increase in thriftiness would be unreasonable. Such a reaction would cause a decline in consumption. When the taxation is known to be permanent, however, the payment of taxes, no matter what kind, reduces the available income of taxpayers. The normal reaction of individuals to a decline in available income is to diminish absolutely both their consumption and their saving, but to raise the ratio of their consumption to their available income. Taxpayers readjust their spending pattern along their consumption function, and their average propensity to consume rises.

There remains for analysis the influence of consumption taxation upon investment. Since the present exposition is in terms of the long-run equilibrium, the influence of changes in consumption is omitted. If it were to be included, investment would increase, because total consumption rises when the receipts are so used. The impact of consumption taxes on the schedule of

the marginal efficiency of capital is nil in the long run. The correctness of this statement rests upon the nature of the schedule and the reactions of savers and investors. The components of the schedule are the opening of cheaper sources of raw materials, the development of new techniques, the improvement of products, and the rate of interest for long-term investments. Consumption taxes do not impinge on any of these components. The supply schedule of saving and investment in prolonged unemployment is likewise unaltered. Its components, time and liquidity preferences, cost and risk, are unchanged by the fact that consumers have to pay higher taxes. The reduction in individual saving, which is the result of paying the consumption taxes, is just made up by an equal increase in the investment of banks and corporations. Since the two schedules are unchanged, the consumption tax causes no decline in investment.

Although precise measurement of the ultimate income creation of consumption taxation may be impossible, some judgment of its magnitude is desirable. Precise formulation may be unwise because of the wide variety of consumption taxes and the many readjustments which may be made to them, also because of the unequal distribution in income and the different consumption functions of individuals. Nevertheless a judgment of the ultimate income creation of consumption taxes as a whole may be helpful.

We already know the impact of consumption taxation upon the propensity to consume and the desire to invest. The average propensity to consume changes in the same degree as an equivalent reduction in available income which is the result of a proportional income tax, when there is an equal distribution in income, and when all individuals have the same consumption function. There is no decline in investment. These reactions in the consumption function and in investment are the same as those in the previous case, when the proportional personal income tax is ignored by banks and corporations.\* When, however, the distribution in income is uneven, there is a discrepancy between the proportional income tax and consumption taxation.

\* Under these special conditions the ultimate income increment is equivalent to that in two previous cases, (a) see the previous topic, and (b) the final topic in Chapter III, particularly p. 56ff.

Even if the same sum is collected under the two kinds of taxation, the proportion of the taxes paid by the rich to the total tax receipts is smaller for consumption taxation than for the proportional income tax. This is the result of the inequality in the distribution of income which enables the rich to consume a smaller share. For example, a 10 per cent retail sales tax is equivalent to a 10 per cent income tax on the poor, for they consume 100 per cent of their income. On the other hand, when an individual receives \$100,000 income and consumes \$50,000, a 10 per cent consumption tax is not equivalent to a 10 per cent income tax, even if his consumption net after the consumption tax is unchanged. When he pays the entire consumption tax by reducing his saving, he pays for consumption, including the tax, \$55,600 approximately. After subtracting the 10 per cent tax, which is \$5,560, he enjoys the same absolute consumption. However, a 10 per cent income tax would be \$10,000.

Likewise, when individuals have different consumption functions, although their absolute income may be the same, consumption taxation will not fall on them equally. The individual who is less willing to save has to pay a higher consumption tax than the more thrifty individual, although each may have the same income. When, therefore, the distribution of income is unequal and individuals have different consumption functions, consumption taxation does not impinge precisely upon individual saving, as does a proportional personal income tax when the tax receipts are the same in each case. Less is paid out of saving in the case of the former than in the case of the latter. Since the reaction in investment is the same for consumption taxation as for the proportional personal income tax which the banks and corporations ignore, the ultimate income creation for the former is less than that for the latter when the total receipts are the same. Nevertheless, consumption taxation is a powerful instrument for income creation because there is no reduction in investment and because the taxes impinge upon saving.

#### INCOME CREATION AND TAX CAPITALIZATION

In Chapter II the influence of the impact of taxation upon the capital values of assets was outlined. That analysis must now be brought into harmony with the recent discussion. The

income creation which is the outcome of new taxation may modify the initial capital loss which would otherwise result from the impact of the tax. When the bankers lend and invest at the equilibrium rate irrespective of the income tax, a decline of security prices, for example, makes them a profitable investment. Providing the banks stand ready to buy such assets, their prices cannot fall. Such stability, however, depends upon a perfect market.<sup>4</sup>

In the case of consumption taxation, the value of assets which are not employed in the production of consumers' goods is not altered. But what of the assets which are used to produce consumers' goods? The income creation and the use of the tax outlay for consumption together mean an increase in consumption and an expanded demand for such assets. Thus they may not fall in value.

The owners of assets such as common stocks which receive a variable return, must take advantage of the policy of lending without interest to expand their investments even if consumption taxation is adopted or if the banks ignore the tax. The policy expands investment and reduces the marginal yield. If such owners should remain passive, the increase of new competitors, who are encouraged by the policy, would lower their return. The reduced yield would inflict losses of capital value.

Let us examine the case in which the proportional income tax is combined with the lending and investing of the receipts without interest. Obviously the tax impinges upon fixed income yielding assets, like bonds. However, their value may not be reduced if the lending and investing policy is open to all borrowers. Speculators and dealers can then operate with borrowed funds and tax receipts just as any investors. It is profitable for them to enter the market for such assets with these borrowed funds whenever the assets fall in value.\*

\* An example might be helpful. A \$100 bond pays 4 per cent. A proportional tax of 50 per cent is imposed, which reduces the net yield to 2 per cent. The government lends a dollar for each dollar of private lending. The supply price of investors is 8 per cent, which includes the tax. Under these conditions, what is the value of the bond? From the point of view of the bond owner, the bond is worth only \$50. From that of the banks and dealers who employ their own funds, the \$50 which they invest must earn 8 per cent, but the government adds \$50

It must be remembered that the purpose of this topic has not been to exhaust the subject or to determine the price of a particular asset. It has been rather to outline the influence of the method of income creation by taxation upon the value of capital assets. The conclusion, that there need be no capital losses if the correct policy and taxes are adopted and if the entrepreneurs take advantage of the policy, is to be interpreted in this light.

### PROGRESSIVE TAXATION

This exposition has thus far slighted the distribution in income. This omission does not make the foregoing analysis incorrect. It merely fails to present the policy under its most favorable conditions. The great inequality in the distribution in income has concerned economists and social reformers ever since the development of the science. Although the classicists believed that taxes should be kept as low as possible, they recognized that the tax burden should be borne according to the ability-to-pay principle. The rich should pay more than the poor because they could afford to do so.<sup>5</sup> Progressive taxation of incomes has long been presented as a solution to the inequality in the distribution in income. The Keynes and Hansen school recommend high progressive taxes as a means of reducing individual saving and of raising the community's average propensity to consume.<sup>6</sup> The income creating power of such taxation has never been formulated, although it is known to be more powerful than the proportional income tax.

Progressive taxation is simply raising the tax rate as the tax base increases. The progressive income tax involves an increase in the tax rate as the taxable income rises. This kind of levy is applied to both individual and corporate income. There is also

without charge. The \$4 yield on the bond is 8 per cent for the \$50 of private investment, in addition to the \$50 of the tax outlay. The banks and dealers would be ready to buy at any price below \$100, while the bond owner would be ready to sell at any price above \$50. The low price of \$50 depends upon a maturity date which is far in the future, for the owner has the option of holding the bond until maturity when he receives \$100. When the life of the bonds is not far distant and the owners do not have to liquidate their holdings, and when the banks and dealers have abundant investable funds, the bond market need suffer little or no decline.



progressive taxation of inheritance. Fisher suggests that this principle be applied to consumption.<sup>7</sup> The tax base may be personal property and wealth. Although there are these special situations which may be increased by the addition of various conditions, progressive taxation reduces consumption less than does the collection of an equal sum by means of the proportional tax. In the case of the latter, when the tax falls upon the low-income groups, there is no income creation if the possible expansion in private investment is disregarded. The receipts must be paid by a reduction of consumption, and the government outlay merely returns the same sum to the income stream. When, however, an equal amount is collected from the high-income groups, the tax payment reduces saving more and consumption less, with the result that the government outlay raises the income stream. The explanation lies in the slope of the consumption functions of the rich and poor. The former is steeper than that of the latter.

In addition to the reaction in consumption there is, of course, the influence of progressive taxation upon investment.<sup>8</sup> As in the case of proportional taxation, the reaction in investment depends upon a variety of conditions. The tax may cause no decline in investment on the one hand, or may raise the supply schedule by the full amount of the tax on the other. These general observations may become clearer after an examination of specific situations.

The foregoing analysis suggests that the many cases of income creation which are possible may be combined into three, two of which state the lower and upper limits of the principle and one of which falls in the middle ground between the limits. The following analysis is simplified into these three cases, and additional assumptions are made concerning the distribution in income and the impact of the progressive taxation. The first case is the least income creating, because the schedule of the marginal efficiency of capital is assumed to have an elasticity of unity, and because the supply schedule of investment is assumed to be horizontal and to be raised by the full amount of the tax. The second case, which is more income creating than

the first but less income creating than the third, is characteristic of a variety of situations. The ultimate income increment of the first case approaches that of the second case as either of the schedules of demand for or supply of investment approaches the absolutely inelastic. That is, as either of the two assumptions of the first case are removed one at a time and the elasticity of the schedule in question becomes less elastic, the ultimate income increment of the first case approaches that of the second. There is another situation which the second case represents. In the foregoing situations all investors raise their supply price to cover the tax. This condition is incorrect when the personal progressive income tax is not combined with a corporation tax, although interest and dividends are taxable personal income. The second case states the ultimate income increment in this situation when the receipts are consumed. The third case presents the ultimate income creation when the schedule of the marginal efficiency of capital is elastic and the receipts are loaned and invested to expand private investment, and when banks and corporations ignore the operation of the personal progressive income tax. The third case may also indicate the approximate income creation when progressive consumption taxation is adopted. The significance of these three cases will become apparent when income creation by means of taxation is compared, in a later chapter, with the method of government deficit spending. Then it will be seen that the former compares favorably with the latter.

#### THE FIRST CASE

The following are the particular assumptions: (*a*) the schedule of the marginal efficiency of capital has an elasticity of unity; (*b*) the supply schedule of saving and investment is horizontal, and is raised throughout by the full amount of the tax; (*c*) the top income group which is subject to the high tax rate furnishes all the saving and investment out of past accumulations and current supplies; (*d*) the distribution in income between the rich and the poor is discontinuous, that is, the poor are so poor that they never can receive enough income to rise

into the rich, taxpaying class. Further detailed assumptions concerning the income distribution are made to exhibit its influence upon the principle.

Let the subscript  $r$  indicate that the item in question refers to the rich.  $Y_r$  is the income of the rich. The tax falls upon the income of the rich entirely, and not at all upon the poor who consume 100 per cent of their income. Let us formulate the initial income increment, or the multiplicand, in this situation. Consumption before the imposition of the progressive income tax is  $APY$ . Consumption out of available income, after the tax is paid, is written  $(APY - mp_r t_r Y_r)$ . The tax receipts are  $t_r Y_r$ . Investment before the tax is  $(Y - APY)$  and, since the rich furnish all the saving and investment,  $(1 - t_r)(Y - APY)$  states the investment after the tax. The initial income increment can be written  $[(APY - mp_r t_r Y_r) + t_r Y_r + (1 - t_r)(Y - APY) - Y]$ . This expression reduces to  $(t_r Y_r - mp_r t_r Y_r - t_r Y + t_r APY)$ .

This general expression can convey more meaning for the income-creating power of taxation if numerical assumptions are made concerning the distribution in income. The principle will stand out after a series of instances. Let the income be so divided that one half goes to the poor and the other to the rich. Then  $Y_r$  is equal to  $\frac{1}{2}Y$ , and the latter can be substituted for the former in the above expression. The following is the result:  $t_r Y(AP - \frac{1}{2}mp_r - \frac{1}{2})$ . Let us change the assumption concerning the distribution in income and make the distribution more unequal. Let the poor receive one third of the income. Then  $Y_r$  equals  $\frac{2}{3}Y$ , and the initial income increment can be written  $t_r Y(AP - \frac{2}{3}mp_r - \frac{1}{3})$ . Comparison of these two initial income increments is a dangerous procedure, because the marginal propensities to consume are not likely to be the same in each instance. In the latter, where the distribution in income is more unequal, the income per rich person is likely to be larger and the marginal propensity to consume is likely to be lower. Nevertheless this likelihood merely emphasizes and magnifies the difference which already exists. If the same marginal propensity to consume is substituted in each expression, the latter is larger than the former. The lower the marginal propensity

of the latter expression to consume below that of the former, the greater the difference between the two. In other words, the more unequal the distribution in income, the larger is the initial income increment which is the result of a given tax falling only upon the rich under the given assumptions.\*

Now that we know the expression for the initial income increment, the next step toward the formulation of the ultimate income increment is to analyze the multiplier. The distribution of the income increment between the rich and poor obviously influences the multiplier, which is smaller the larger the proportion of the increment received by the rich. The marginal propensity of the rich is lower than that of the poor, so that the concentration of income in favor of the rich reduces the community's marginal propensity to consume.

These general observations may become clear after the multiplier is worked out for each of the previous instances. It is logically sound to assume that the distribution in income is based upon fundamental principles which operate equally upon the income base and the income increment. Historically, the distribution in income has remained remarkably constant. That is, the proportion of the total income which the property owning class has received before the payment of taxes has been the same after the lapse of long intervals.<sup>9</sup> The causes which determine a given distribution in income are likely to persist, at least over relatively long periods, with the result that the dis-

\* The analysis of the foregoing paragraph may easily be integrated with the earlier analysis of the similar problem of the proportional income tax. The expression for the initial income increment for that case, which has the same underlying conditions, is  $tY(AP - mp)$ . This expression is equal to the above two expressions when  $mp$  is the average marginal propensity to consume of the rich and the poor together;  $t$ , of course, is equal to  $t$ , and the other items are identical. The above analysis is based on the assumption that the poor consume 100 per cent of their income and, since, by hypothesis, they can never rise into the class of the rich, their marginal propensity to consume is 1. In the first instance, when the distribution in income is assumed to be one half to the poor and the other half to the rich, the average of these two propensities is  $\frac{1 + mp_r}{2}$  or  $(\frac{1}{2}mp_r + \frac{1}{2})$ . This last ex-

pression may be substituted for  $mp$  in  $tY(AP - mp)$ , and the result equals the expression in the first instance above. A similar substitution is possible in the case of the second instance above. The average of the marginal propensities to consume is  $(1 + 2mp_r)/3$ . The analysis of the inequality in the distribution in income is thus integrated with the earlier analysis.

tribution of the income increment is the same as that of the income base. If, for the sake of the argument, the period is assumed to be very long, that is, infinitely long, the determination of the multiplier is possible.<sup>10</sup> In order to make the analysis concise, only the tax multiplier is developed. The simple multiplier may easily be established by substituting zero for  $t_r$  in the tax multiplier.

The marginal propensity of the poor is 1 by hypothesis, and the incremental tax falls only on the rich. In the first instance, the poor receive one half of the income increment and, in the second instance, only one third, the remainder in each case going to the rich.<sup>11</sup> The rule of thumb which establishes the multiplier is helpful at this point. When the distribution in income is one half to the rich and the other to the poor, the second income increment may be expressed as follows:  $[\frac{1}{2} + mp_r(\frac{1}{2} - \frac{1}{2}t_r) + \frac{1}{2}t_r]$ . The first item is the consumption increment of the poor, whose marginal propensity to consume is 1. The second item is the consumption increment of the rich, who receive one half of the first income increment and whose available income increment after taxes is the expression within the parenthesis. Their marginal propensity impinges upon this increment in available income. The third and last item indicates the expenditure of the incremental tax receipts. By substituting this expression for  $mp$  in the simple multiplier and reducing, the tax multiplier in this instance becomes  $2/(1 - mp_r)(1 - t_r)$ . In the instance when the distribution in income is more uneven, as when the poor receive one third and the rich two thirds, the tax multiplier is  $3/[2(1 - mp_r)(1 - t_r)]$ .<sup>\*</sup> The multiplier in the first instance is obviously larger than that of the second, the relevant items being the same. Thus, the relative size of the multipliers stands in reverse order to that of their multiplicands.

The expressions for the ultimate income increments in these two situations may easily be written by combining the correct multiplicands and multipliers. When the distribution in income is in halves, the ultimate income increment is

<sup>\*</sup> The second income increment may be written  $[\frac{1}{3} + mp_r(\frac{2}{3} - \frac{2}{3}t_r) + \frac{2}{3}t_r]$ .

$$\frac{2t_r Y (AP - \frac{1}{2} m p_r - \frac{1}{2})}{(1 - m p_r)(1 - t_r)}$$

When the distribution in income is one third to the poor, the ultimate income increment is

$$\frac{\frac{2}{3} t_r Y (AP - \frac{2}{3} m p_r - \frac{1}{3})}{(1 - m p_r)(1 - t_r)}$$

A comparison of these two expressions is enlightening. When  $AP$  is given the value of 90 per cent in each expression and the marginal propensity of the rich is the same in each, the second expression is larger than the first for every value of  $m p_r$  from zero to a figure just smaller than .8. A similar difference might be established for other higher values of  $AP$  short of 100 per cent. Since, however, the marginal propensity of the rich to consume is likely to be lower the greater the inequality in the distribution in income,  $m p_r$  is less in the latter expression than in the former. The result of this difference is that the second expression becomes even greater in relation to the first. The gain in the multiplicand which results from the reduction in the marginal propensity of the rich more than offsets the loss in the multiplier which is due to the same change. The above conclusion, that the greater the inequality in income the larger is the income creation, is verified within the given assumptions.

The operation of tax-financed income may be demonstrated by a comparison of the ultimate income increments which are the result of proportional and progressive income taxation respectively, all other determinants remaining the same. Let us substitute given values for  $AP$ , 90 per cent, and for  $m p_r$  in the expressions, and compare each with the expression for the proportional tax, all other things being equal. When the distribution in income is in halves, marginal propensity of the rich is  $\frac{1}{2}$ , and  $AP$  is 90 per cent, the ultimate income increment is  $0.6t_r Y / (1 - t_r)$ . In the case of the proportional income tax, when  $AP$  is 90 per cent and  $m p$  is the average of 1 and  $\frac{1}{2}$ , the ultimate income increment is the same:  $0.6t_r Y / (1 - t)$ . When the distribution in income is one third to the poor,  $AP$  is 90 per

cent, and  $mp_r$  is  $\frac{1}{3}$ , the ultimate income increment is  $0.77t_rY/(1 - t_r)$ . In the case of the proportional income tax, when  $AP$  is 90 per cent and  $mp$  is the average of 1 and  $mp_r$ , the ultimate income increment is  $0.77tY/(1 - t)$ . The largest income increment occurs when the distribution in income is the most unequal. Because, in the comparisons, the ultimate income increments are the same, it does not follow that the proportional income tax is as powerful in creating income as the progressive tax.

The power of a tax to create income may be measured by the ratio of its ultimate income increment to the total tax receipts. The larger the ultimate income increment in relation to the total tax receipts, the more powerful is the tax in creating income. Let us apply this measure to the above comparisons.

In both instances, the income increments are the same,  $0.6t_rY/(1 - t_r)$  and  $0.6tY/(1 - t)$ . The measure of the power of a tax to create income may be expressed in general as (income increment)/(total receipts or tax outlay). If this measure is applied to the foregoing income increments, the following are the results. The measure of the power of the proportional income tax under the above assumed conditions is  $0.6/(1 - 0.4t)$ , while that for the progressive income tax is  $2[0.6/(1 - 0.4t_r)]$ . The latter is twice the former, and this comparison shows that, under the given conditions, the progressive income tax is exactly twice as powerful as the proportional income tax. In the second instance above, when the comparison between the proportional and the progressive income taxes is made on the assumption that one third of the income goes to the poor, the ultimate income increments were the same. They were respectively  $0.77tY/(1 - t)$  and  $0.77t_rY/(1 - t_r)$ . The measure of the income creating power of the former is  $0.7/(1 - 0.3t)$ , while that of the latter is

$$3 \left[ \frac{0.77}{2(1 - .3t_r)} \right].$$

The latter measure is larger than the former. The general conclusion follows from these examples that the progressive income

tax is a much more powerful means of income creation than the proportional income tax.

Perhaps this operation is made clearer by working out a somewhat similar situation. One may feel that the progressive income tax is thus far merely an adaptation of the proportional income tax. Let us, therefore, introduce a second tax bracket, the middle-income group. The assumptions are that the distribution in income is in thirds, one to the poor, one to the middle-income group, and one to the rich, that no group receives sufficient additional income to raise it into a higher class, and that the tax rate on the middle group is one half that on the rich, while the marginal propensity of the former is twice that of the latter. There is an additional assumption that investment is a function of the tax rate on the rich rather than of the lower rate. This assumption causes investment to decline to the same extent as if a proportional tax were imposed at the highest of the progressive rates. The investors from the middle group follow the advice of the rich investors who base their decisions upon the highest tax rate.

In this situation the ultimate income increment is

$$\frac{[t_r Y(3AP - 2mp_r - 1.5)]}{(2 - 3mp_r + 2mp_r t_r - 1.5t_r)} \cdot *$$

Perhaps additional light may be thrown on the subject by giving values to some of the determinants. Let  $AP$  be 90 per cent and  $mp_r$  be 0.25. The following is the result:  $0.7t_r Y / (1.25 - t_r)$ . The power of the progressive income tax to create income under these assumptions is given by the ratio of this ultimate income increment to the total tax receipts. The ratio in this situation is  $2(0.7) / (1.25 - 0.3t_r)$ . When  $t_r$  is infinitely small, the ratio is 1.12. When  $t_r$  is 100 per cent, the ratio is 1.47.†

\* The ultimate income increment may be written at the outset

$$\frac{APY - 2mp_r(\frac{1}{3}t_r Y_r) - mp_r t_r Y_r + \frac{1}{3}t_r Y_r + t_r Y_r + (1 - t_r)(Y - APY) - Y}{1 - [\frac{1}{3} + 2mp_r(\frac{1}{3} - \frac{1}{3}\{\frac{1}{3}t_r\}) + mp_r(\frac{1}{3} - \frac{1}{3}t_r) + \frac{1}{3}(\frac{1}{3}t_r) + \frac{1}{3}t_r]}$$

By hypothesis, the marginal propensity of the middle group is  $2mp_r$  and the tax rate is  $\frac{1}{3}t_r$ .  $Y_r$  is equal to  $\frac{1}{3}Y$ . After substitution and reduction this expression equals that in the text.

† For an analysis of the second and third cases, see Appendix to this chapter.



## PROPERTY AND CORPORATE INCOME TAXES

Except for Chapter II, this analysis has been made entirely in terms of the personal income tax and consumption taxes. There remain general property and corporate income taxes, which must be fitted into the foregoing treatment to complete the argument. The question is, do these two kinds of general taxes fall within the previous analysis? The answer is likely to be in the affirmative although certain reservations are necessary for each.

The personal property tax, whether it is proportional or progressive, may have an initial impact which is distinct from that of the personal income tax. Many kinds of property do not yield money income to the owners and the general property tax would fall more heavily on such individuals than would the income tax, other things being equal. This difference is likely to develop particularly in underemployment equilibrium, when such individuals might have to pay property taxes while exempt from income taxes, or they might have to pay more under the former than the latter. Some taxpayers may sell assets to raise the funds; and if these are purchased directly or indirectly by the investment of idle credit, there is income creation when the tax outlay is correctly employed. The sale of such property is likely to attract new funds, since its value falls sufficiently to raise the expectation of income in excess of the tax. This sum, of course, declines with the fall in the sales value, because the appraised value for taxation is apt to be equal to or less than the market value. In a perfect market, new spending would flow rapidly into these assets, and no deflationary reactions in addition to the equilibrium decline in investment are to be expected. Nevertheless the market is not perfect, and policy decisions must be based on this fact.

In underemployment equilibrium, the sale of property to pay taxes may create deflation by causing investors to postpone commitments in anticipation of lower prices on these assets. This reaction might worsen conditions through its impact on the banks, who would be less willing to lend if loans became less secure. It is easy to continue snowballing such reactions

into a deflationary catastrophe, but our present task is to appraise the likelihood of such a cumulative process being started.

There are two reasons why such a deflationary process is not likely to follow from the imposition of a general property tax. First, the tax base is broader than for the personal income tax, so that the rate on the former is less than on the latter. Hence the decline in new investment which results from the property tax is less than for the income tax. This conclusion follows from the fact that property which yields no monetary income would be taxable under one and not under the other. If the tax rate on new investment is lower for the property tax than for the income tax, then the offset to the income creation is less for the former, other things being equal.

The second reason is that the ownership of property is closely related to income. In general, and providing the tax is reasonable, the individual is able to pay the property tax out of current income. It is uncommon for taxpayers to sell property to raise the necessary funds, since their incomes are generally large enough. The imposition of a property tax may not, therefore, force the liquidation of large amounts of property, and the strength of this deflationary action is thereby mitigated.

Notwithstanding these two reasons, the property tax does impose at the outset deflationary stresses which exceed those of the personal income tax and to this extent the latter is preferable to the former. In Chapter VIII, however, it will be shown that deficit spending may be used to supplement the principle for the short run and that these disadvantages of the property tax can be overcome.

In contrast to the short run, the long-run results of the personal property tax as regards income creation are likely to be the same as those of the personal income tax. The tax, which is based upon the market value of property, falls upon the income, either monetary or psychic, which flows from it. There is little difference whether the tax is calculated on the market value of the property and the owner deducts it currently from the income, or whether it is based upon income and the tax capitalized. In either case the taxpayer's available income is reduced equally, and he makes the same adjustment along his

consumption function and in his supply price of investment. The conclusion follows that in the long run the power of the two taxes to create income is likely to be the same.

This conclusion gives us a part of the answer to the question with which this topic began. That is, the part of a general property tax which falls upon personal property fits into the previous analysis. No alterations in those findings are necessary. Let us now turn to the business property tax.

From the point of view of income creation, business taxes fall at the outset upon a sensitive locus. Business investment accounts for a large fraction of private investment; and until the taxes are shifted in the long run, private investment may be reduced, not only because businessmen anticipate the taxation, but also because its burden is magnified. In general a business property tax is less desirable than the personal income tax.<sup>12</sup> It is, in fact, taxation of individual incomes without the fiscal authorities knowing whose incomes are diminished.

There may be the forced liquidation of business property as the result of the tax, just as in the previous case of the personal property tax; and what was said in this connection earlier in this topic is equally applicable to the taxation of business property. There is little doubt that in the short run the imperfections of the investment market are such that an adequate flow of new funds into the purchase of old assets is not assured. The imposition of general business property tax in underemployment equilibrium may easily be excessive. Nevertheless the two mitigating circumstances, which applied to the personal property tax, are applicable also to the taxation of business property. Providing the increase is slight, the deflationary reactions are likely to be of a magnitude which the investment market as a whole can absorb. Also income and property are closely related in the case of business. Many firms can meet the additional tax burden at the outset out of income and do not have to sell assets. In addition, the short-run deflationary reactions, which are not thus offset, can be mitigated by a temporary governmental deficit. Hence in the short run the taxation of business property may not be very deflationary.

In contrast to this similarity, the long-run adjustments to the

business property tax differ from those of the personal property tax. In the long run the taxation of business is almost always shifted either to consumers or back to the factors of production. While this impact is still upon somebody's income, it does not fall upon that of the taxpayer directly; hence the previous analysis in terms of the proportional and progressive income taxes is not strictly applicable.

If the entire tax on business property is passed on to consumers, the results are the same as those of consumption taxes. In the long run individuals find that their available income is diminished by the increase in prices, and they adjust their consumption saving pattern. To some extent the taxes are paid out of saving. At the same time taxes which are passed on to consumers do not reduce the demand for investment. Income creation results.

It is impossible, however, to predict accurately the impact of forward tax shifting. The more capitalistic processes of production would require the largest price rise. Hence the prices of consumers' goods would not all rise equally. This would hit some income groups harder than others. It is impossible to say whether the main impact would fall upon those income groups who save, and hence to give an exact statement of the income creation.

If the entire tax is shifted back to the workers in lower wages and the labor force is unchanged, the tax is paid mainly out of consumption and there is little or no income creation. Many workers can save nothing and would have to pay the tax entirely out of consumption. The supply price of investment would be unaltered and, barring the use of the tax outlay to expand private investment, there would be little or no income creation.

The actual course of events is likely to be a mixture of these extremes of tax shifting. Prices of consumers' goods are likely to rise somewhat, and certain unprotected income groups are likely to receive less. The former shift is income creating while the latter is only neutral so that the combined result is positive, although an exact statement of the income creation is impossible.

The business property tax is income creating in the long run

to the extent that it is passed on to consumers who pay it out of saving. To the extent that it is shifted back to workers in lower wages it is paid out of consumption and there is no income creation, unless the tax outlay stimulates private investment. Which of these two reactions is more likely to occur in reality? The answer to this question is not easy; nevertheless, it is important because if the business property tax is not income creating in the long run, the argument will have failed to establish a general principle.

Support of the unemployed either through unemployment insurance or government relief, which is probably financed by borrowing but which may be met by taxation, is an accepted policy today. Hence it is impossible to shift the burden of the business property tax on to the workers in lower wages. There comes a point when they prefer unemployment to any further reduction in income and then no additional burden can be placed on the workers. Instead the tax can be passed on in higher prices, since output has decreased, to consumers who meet the increase to some extent out of saving. Income creation is set in motion and, as output expands, more of the tax is shifted to consumers, which raises the consumption function and removes the discouraging influence of the tax from private investment. The workers' real income is diminished, of course, because they are paying higher prices for consumers' goods. Nevertheless, there is income creation as the higher-income groups meet the higher prices by moving up their consumption function. It should be noted that as this is the long-run adjustment it is a slow process. More time is necessary before the ultimate income creation is reached in the case of the business property tax than for the personal property tax.

In this roundabout way the business property tax fits into the analysis of the earlier chapters. What was said then may be applied in this instance within the proper qualifications.

Much more could be written about the influence of the corporation income tax upon income creation than there is room for here. The immediate question concerns whether this tax is in general an exception to the previous analysis. The foregoing analysis of the general property tax is applicable to the corpora-

tion income tax both as regards the short run and when the latter is shifted in the long run, so that this ground may be covered rapidly and more space can be devoted to the new ground which lies ahead. The initial impact of the corporation income tax is more deflationary the larger the amount of assets which are sold as a result and the larger the size and number of corporations which pass through bankruptcy. If the tax is light and confined to net income, the deflationary shock should be absorbed by the flow of new funds into investment.

In the long run the corporation income tax may be shifted either to consumers or back to the factors of production. As in the case of the business property tax it is likely that some of the tax is passed on to consumers, and if the taxation is spread through all fields, it is bound to impinge upon individual saving. Also when the tax is shifted, there need be no decline in investment in the long run. Hence under these conditions there is income creation as the previous analysis indicates.

There is the possibility, however, that this tax cannot be shifted and that it impinges upon investment. Under certain conditions this leakage may be so great that the corporation income tax causes income destruction. What are these conditions? First, corporations produce only a small fraction of consumers' goods, so that they cannot pass on their taxes to consumers, and the tax receipts from these corporations are small. Second, corporations carry out all the investment and they raise their supply price to cover the tax. Under these conditions the tax falls heavily upon investment and only slightly upon saving, with the result that the tax outlay is insufficient to offset the decline in investment. There is income destruction. It is only necessary to verify this statement and the analysis of the exceptions may be omitted. The verification must be consistent with the methodology of previous chapters so that the deflationary possibilities can be seen as an exception.

According to this method let us assume that the schedule of the marginal efficiency of capital has an elasticity of unity, that the tax is proportional and falls upon all expected income from investment, and that the supply curve is horizontal and raised by the full amount of the tax. Under these conditions the de-

cline in investment which is the result of the tax exceeds the tax outlay which is paid by all the producers of investment. Hence, unless the tax receipts from the corporations which produce consumers' goods are large enough and paid sufficiently out of saving to close this gap, there is income destruction.\*

This possibility is a grave weakness of the corporation income tax as an instrument of income creation. If this is a likely possibility and if the method rests only on the corporation income tax, the foregoing argument is nullified. In my opinion, however, these two conditions do not vitiate the argument.

The first condition is not likely to arise. The corporation is common in all fields and not confined mainly to investment. A corporation income tax does not, therefore, fall predominantly upon investment but impinges also on saving.

The second condition is likewise unnecessary. The foregoing analysis demonstrates that this policy includes several other kinds of taxes so that this admitted weakness in the corporate income tax can be circumvented. What is even more significant, however, is that this possibility has in part been included in the argument of chapters III and IV. There it was proved that if all investors, which includes corporations, raise their supply price to cover the tax, when the supply schedule is in the most unfavorable position, income creation results when the tax receipts are properly spent. Thus, providing the taxation of income is general and equitable, it may include corporate income along with that of individuals. In fact the corporate income must be taxed equally with individual income, by either counting the latter as taxable income of the former or permitting deductions to the personal income tax for the tax paid by the corporations. The two income taxes must be integrated in order to prevent either tax evasion or excessive tax burdens from falling on stockholders who receive small taxable incomes. To be most effective there must be careful coördination between these taxes.

\* The underemployment equilibrium investment before the tax is  $i$ , and the equilibrium investment after the tax is  $(1 - t)i$ . The tax receipts from all these producers is  $tji$ , and the decline in investment is  $i - (1 - t)i$ . For all values of  $t$  the former is less than the latter, and unless the corporation tax causes a sufficient fall of saving elsewhere there is income destruction. See Appendix B to Chapter III.

INTRODUCTION TO THE SCOPE OF  
INCOME CREATION BY TAXATION

The argument thus far is that taxation may be used as an instrument of income creation in all positions of the demand and supply curves of investment. It has furthermore demonstrated that this conclusion holds not only for the proportional personal income tax but also for consumption, property, and corporate taxes. Thus it is possible to speak of the principle of income creation by means of taxation because this conclusion follows for a wide variety of cases. Care however should be taken to make the proper qualifications in applying this method, as in the case of any broad generality.

In spite of the fact that the analysis has proceeded under certain limiting conditions, they are not sufficiently restrictive to eliminate the benefits which come from a general examination. Every economic analysis which is in terms of the long-run adjustments toward a new equilibrium is subject to qualifications which arise in the short run. Nevertheless, few economists argue that general economic laws are not useful. There is, furthermore, a practical advantage of examining taxation as an instrument of income creation at this time before many of the short-run qualifications are introduced. The advantage is that the outline is sharper and the qualifications remain as subsidiary and subordinate to it instead of obscuring it. Before we modify the analysis in the next chapter by removing the remaining underlying assumptions, it is well to indicate the scope of the analysis in two directions, first budget balancing, and second the nature of government spending.

The government can balance its budget and, at the same time, raise income sufficiently to achieve full employment. There is no theoretical difficulty in solving the underemployment equilibrium by means of income creation through taxation. The government's method of balancing the budget is not to reduce its expenditures until they equal the diminished tax receipts, but instead to raise taxes and spend the receipts to create income. There is no dilemma confronting the government when unemployment is chronic, and the government must maintain the idle and provide jobs at a time when its tax receipts are low. The



dictates of humanity conform with the sound principle of economics of creating income to support the unemployed by means of higher taxes. The conservative, who does not accept the solution of an ever growing debt and who would not accept equally the solution of a reduction in government expenditures to balance the budget, may now champion both a balanced budget and a government policy to achieve full employment. The debate whether the budget should be balanced annually or over a period of years concerns the business cycle strictly and not the long-run problem of secular unemployment. Only if the long-run level about which the cyclical fluctuations occur is sufficiently high, can the budget be balanced in either sense. The pseudo-mechanical approach is to assume that the periods above normal equal the periods below normal, and that a period of prolonged unemployment and low income will be followed by a long period of prosperity. In my opinion this reasoning is solving the problem by hypothesis, for the problem before the government is how to raise the long-run level in income.

The remaining direction in which the analysis is significant concerns the nature of government spending. The Keynes and Hansen approach is to change the modern economy from a high saving to a high consumption society.<sup>13</sup> Their method is to tax and spend for consumption; where this method is inapplicable the government should incur a deficit. The foregoing chapters indicate that this approach is half correct. When the schedule of the marginal efficiency of capital has an elasticity less than unity, social consumption financed from higher taxes is desirable. On the other hand, it is a different matter when the schedule has an elasticity greater than unity. Tax-financed social consumption is a less powerful method of income creation than the lending and investing of the receipts to expand private investment. Furthermore, the method of taxation for community consumption is income destroying under certain conditions, as when the tax falls upon investment and the schedule is very elastic. Of course, under these conditions Keynes and Hansen would prefer government deficit spending. Under these same conditions, however, the power of taxation to create income in the long run is likely to exceed that of deficit spending, as will

be seen in a later chapter. Under taxation, furthermore, the consumption increment may be even larger than under deficit spending.<sup>14</sup> The increase in investment under the former is bound to expand the flow of consumers' goods at lower but profitable prices, whereas the latter neither expands capacity nor lowers costs of production.

The difference between the two methods concerning the nature of spending should not obscure the similarities. The definition of social consumption may overlap private investment. Hansen's projects of slum clearance, rural electrification, erosion control, low-cost housing, and others are all possible under income creation by means of taxation, when the receipts are loaned and invested to expand private investment. Using the former method it is a government project, using the latter it is a private-enterprise project sponsored by the government. Many, if not all, social investment projects which Hansen would carry out by government deficit spending could be accomplished by taxation.

The method of income creation by means of taxation bears upon certain of the proposed social reforms. The redistribution in income to diminish the inequality is one. This objective itself is incompatible with the maximum income creation when the schedule of the marginal efficiency of capital has an elasticity greater than unity. If the government should tax the rich and give the receipts to the poor, the inequality would be reduced at the price of either an absolutely or a relatively lower total income which otherwise might prevail.<sup>15</sup> Certainly the more desirable solution is to raise income to the maximum which is possible within full employment, and to distribute the income increment according to the laws of distribution. When progressive income taxes are imposed, the low income groups would enjoy the largest income increment net after taxes, which in itself reduces the inequality. There is also the suggested reform of increasing all kinds of social services: social insurance from the cradle to the grave, educational opportunities for young and old, and a government supported standard of nutrition. One may accept the need for and desirability of such reforms and yet limit them to the situation when the schedule of

the marginal efficiency of capital is inelastic. The foregoing argument is still applicable, and these reforms may be achieved more quickly through taxing to create income.

## APPENDIX

### THE SECOND AND THIRD CASES

#### The Second Case

There is only one special assumption for this case, which is that investment remains unaltered by the progressive tax. There are three conditions, any one of which maintains the same level in investment after the tax as before. The conditions are: (a) when the schedule of the marginal efficiency of capital is absolutely inelastic; (b) when the supply schedule of investment is absolutely inelastic; and (c) when the personal progressive income tax is ignored by banks and corporations and the receipts are consumed. If any one of these conditions exists, the situation fits the second case. There is, of course, the specific assumption concerning the distribution in income. This case thus establishes the upper limit which income creation approaches as either the demand curve for investment takes an elasticity less than unity or the supply curve becomes more steeply sloped.

The expression for the ultimate income increment when income is divided into halves between the rich and poor is  $2t_r Y_r / (1 - t_r)$ .\* The income-creating power of the progressive personal income tax in this instance is the ratio of the ultimate income increment to the total tax receipts, which is 2. For every dollar collected in taxes, in this instance, there are two dollars of new income created. The proportional income tax under these assumptions creates the same ultimate income increment, but its power to create income is merely in the ratio of one to one.

There is the situation when the distribution in income is more uneven. Let us assume one third to the poor and two thirds to the rich.† The final expression of the ultimate income increment is  $3t_r Y_r / 2(1 - t_r)$ . In this instance, the power of the progressive tax

\* The formulation of the ultimate income increment when income is divided in halves between the rich and poor is easy. The expression is

$$\frac{APY - m p_r t_r Y_r + t_r Y_r + Y - APY - Y}{1 - \left\{ \frac{1}{2} + m p_r \left( \frac{1}{2} - \frac{1}{2} t_r \right) + \frac{1}{2} t_r \right\}}$$

† The multiplicand is unchanged from the initial expression above because there is no change in the symbols. The multiplier, however, is in terms of thirds instead of halves.

to create income is in the ratio 3 to 2, while the proportional income tax is still 1 to 1.

A comparison of this instance with the previous one in which income is divided in halves indicates two conclusions: (a) when the distribution in income is more uneven, the power of a given progressive tax to create income is less than when the income distribution is more even, under these given conditions; (b) a given tax rate creates the same ultimate income increment in each instance. This is the result of converting  $Y_r$  into the appropriate fraction of  $Y$  in each of the above expressions for the ultimate income increments. Nevertheless, the share of income taken as taxes is not the same in each instance. The taxpayers receive an income increment which just equals their total taxes in each instance. Their available income after taxes is the same as before the imposition of the tax. The poor are the beneficiaries, for they receive an income increment without having to pay any taxes. The entire increase is an addition to their available income. The rich lose nothing while the poor gain.

There remains the instance in which the distribution of income is in three groups, each receiving a third of the income. As before, let us assume that the marginal propensity of the middle income group is twice that of the rich, while the tax rate of the former group is one half that of the latter.

The ultimate income increment is:

$$\frac{3[t_r Y_r (1.5 - 2mp_r)]}{2 - 3mp_r + 2mp_r t_r - 1.5t_r} *$$

Unfortunately the expression cannot be simplified any further. The power of the progressive tax to create income in this instance is the ratio of this ultimate income increment to the total tax receipts. The ratio of the ultimate income increment to the total receipts or tax outlay when  $\frac{1}{2}$  is substituted for  $mp_r$  in the above expression is 2 to 1. When  $mp_r$  is given the value of zero in the above expression, the ratio is 3 to 2. These findings merely verify what has already been indicated. The power of the progressive income tax as an income creator is different under various conditions, and its power is greater than that of the proportional income tax.

\* In this instance, the ultimate income increment is written,

$$\frac{APY - 2mp_r(\frac{1}{3}t_r Y_r) - mp_r t_r Y_r + \frac{1}{2}t_r Y_r + t_r Y_r + Y - APY - Y}{1 - (\frac{1}{3} + 2mp_r(\frac{1}{3} - \frac{1}{3}\{\frac{1}{2}t_r\})) + mp_r(\frac{1}{3} - \frac{1}{3}t_r) + \frac{1}{3}(\frac{1}{2}t_r) + \frac{1}{3}t_r}$$

This reduces to the expression in the text.

### The Third Case

There are two particular assumptions which distinguish the third case from the previous two cases. The schedule of the marginal efficiency of capital has an elasticity greater than unity, which brings the lending and investing of the receipts into the analysis, and the imposition of the progressive tax does not raise the supply price of investors as a whole. The supply schedule does not shift. Either the banks and corporations ignore the tax or, as in the case of Fisher's progressive consumption tax, the tax does not impinge upon the income from investment. There are, of course, specific assumptions concerning the distribution in income, which are comparable to the earlier cases.

The expansion in private investment, which is the result of the lending and investing program, depends upon three conditions: (*a*) the degree of elasticity in the marginal efficiency of capital over and above unity; (*b*) the tax receipts which are the result of the tax rate and the tax base; and (*c*) the reaction of the supply price of investors as a whole to the imposition of the tax. Under the foregoing assumptions of this case, the last of these conditions is already determined by hypothesis. In the third case, the power of the progressive tax to create income rests upon an indefinite number of special circumstances which determine the degree of elasticity in the marginal efficiency of capital and the tax receipts. A clear judgment of this income-creating power is not possible without analyzing this variety of details.

In general, the greater the elasticity in the marginal efficiency of capital and the smaller the tax receipts, the larger is the income-creating power of the progressive tax in this instance. The more elastic the schedule, the lower can be the ratio of the tax outlay to private investment. The lower this ratio, the greater is the expansion in private investment which is the result of a given tax outlay. The larger the expansion in private investment from a given tax outlay, the larger the ultimate income creation, and the more powerful is the given tax. There is the influence of the changes in the tax receipts when the schedule of the marginal efficiency of capital is given. When the given data include the schedule, which is elastic throughout, an increase in investment causes a decline in the marginal yield of capital. Under the lending and investing program, total investment is composed of private investment and the tax outlay. The ratio of the tax outlay to private investment must yield a return which covers the supply price of investors; and the larger the total investment, the

higher must be this ratio because of the fall in the marginal yield. The smaller the tax receipts, the smaller is total investment, and the larger can be the ratio of the tax outlay to private investment. The smaller the ratio, the larger is the expansion in private investment per unit of tax outlay. Finally, the smaller the tax receipts, the lower is the rate, given the tax base.

This paragraph may be stated in more general terms. The resistance to income creation in this case is due to the fall in the marginal efficiency of capital. The resistance is, therefore, less the more elastic is the schedule and the smaller the tax receipts. When the income creation which is necessary to achieve the goal of the objective is relatively slight, the power of the progressive tax in this instance is relatively high.

The measurement of the income-creating power of the progressive tax in this instance is complicated because the formula does not resolve to a manageable form. The wide variety of circumstances which determine the expansion in private investment makes a final judgment on this question needless. Nevertheless, a comparison between the second and third cases is helpful to the argument. If the same assumption concerning the distribution in income is made in each case, the formula for the ultimate income increment which is applicable in the second case is also applicable in the third case if  $K'$  is added to the initial income increment. A given tax rate under a given income distribution is obviously more powerful in the third case than in the second. The initial tax receipts are the same in each, but when they are loaned and invested there is an increment in private investment which increases both the initial income increment and the ultimate income creation. Each unit of the initial tax receipts plays a part in the expansion in private investment. If the coefficient multiplier is applicable,  $k'$  is added to the multiplicand to indicate the smaller initial expansion in private investment. In this instance, the same tax rate is a more powerful income creator than in the previous instance where the incremental receipts were consumed. The conclusion that the progressive tax is more powerful in creating income in every instance of the third case than in the second case is possible. The significance of this conclusion becomes apparent when the power of taxation to create income is compared to that of government deficit spending in a later chapter. Certainly the lending and investing of the tax receipts to expand private investment encourages free enterprise. The achievement of full employment by raising the income of the poor as well as the rich encourages the individual in the freedom of choice of occupation and of the spending of his income.

## CHAPTER VI

### APPROACHING REALITY

CHAPTERS III, IV, AND V HAVE PRESENTED the method of creating income by taxation on a high level of abstraction. The principle has been verified under certain assumptions, but if it is to have any practical meaning these assumptions must be removed one by one. In this way the discussion approaches reality.

The assumptions have held the framework of the analysis rigid and their elimination introduces some uncertainty and less predictability into the analysis. Such alteration is to be expected, but the question remains: Do the conditions of reality vitiate the power of taxation to create income and make it useless as a practical policy? The purpose of this chapter is to answer this question rather than to work out in detail the theoretical ramifications of the many cases which are possible when the assumptions are removed. The chapter, therefore, has a limited scope and objective.

#### STABLE SELLING PRICES

Taxation as an instrument of income creation influences the stability of selling prices in two ways: (*a*) through income creation, and (*b*) through lending and investing tax receipts without interest. The assumption of stable selling prices is not far from the truth as long as there is an abundance of unemployed resources, for then output increases with the expansion in income. As full employment is approached, however, the situation changes.<sup>1</sup>

During the period of adjustment income increases, but the more efficient workers and agents of production are employed first, and, as full utilization of resources becomes an approximation, relatively inefficient workers and agents must be em-

ployed.<sup>2</sup> The initial expansion in output tends to slow up, with the result that the price level of output as a whole may rise. The increase may inject speculative buying in advance of an anticipated price rise, which influences income creation in two ways. The rate of increase in the adjustment period is stepped up, and the speculative income creation ends when prices no longer rise. This speculative unevenness places the policy authority in a dilemma. If it carries on the policy which it started, the initial speculation, which is followed by liquidation, causes a relapse in income. The policy authority is likely to be condemned for not achieving full employment. On the other hand, if it discontinues the policy and avoids the speculative cycle, full employment may not be reached.

In theory a middle course is possible in which the policy is diminished just enough to offset the increase in speculation. One should, however, be skeptical of resolving this dilemma because, as the remaining assumptions are removed, conditions appear which intensify the irregularity of the income creation.

The second way in which the policy of taxation influences the stability of selling prices is through the program of lending and investing without interest. The cost conditions of the typical firm in competitive industries are reduced. The cost reduction may be one of two types. First, the capacity of the typical firm is unchanged while the interest charges are lowered. The government's ratio of tax outlay to private investment diminishes the capital charge which the selling price must cover. Second, the size of the typical firm may expand. The technique of production may allow an increase of durable equipment relative to the other agents of production, because of the ease of obtaining long-term capital at a lower cost. The increase in capacity permits a lower cost per unit of output, and, in competition, the reduction is passed on in a lower price.

In either case, the price decline is not deflationary. It is due to cost reductions which are themselves not deflationary because they set in motion income creation. Whether the influence of income creation and the decreasing efficiency of the agents is offset by the cost reductions, so that the general price level of output as a whole is constant, is impossible to say. One



cannot deny that the tendencies are counteracting. If the price level falls because of the increase in output which is due to the expanded employment of improved capital, the rate of income creation is likely to be reduced. Speculative buying is postponed, and selling may occur. Nevertheless, commodity stocks are eventually liquidated, and the influence of speculative buying may well be more harmful than beneficial to income creation.

#### STABLE PRICES OF THE AGENTS OF PRODUCTION

The assumption of constant price of the agents of production is perhaps even more unrealistic than that of stable selling prices. The former is subject to all the same forces of the free market which influence the latter, but, in addition, unions influence wages, and banks the rate of interest. Both are likely to change in the adjustment period when income is increasing. Unions and banks are institutional factors which are particularly prominent in the modern economy, and they have their own course of development due to their own causes. Although prediction may therefore be impossible, certain observations are necessary.

During the adjustment period income and the demand for labor increase. As union wage policy is traditionally to increase wages in expansion, unions would probably follow the same course. The wage increase raises costs and offsets the income creation which would otherwise result from a given tax and expenditure program. The wider the control of unions in the wage market, the more extensive is the increase in costs, and the greater the offset to the income creation of a specific program.<sup>3</sup>

The policy authority has two courses of action. First, it may expand the tax and spending policy sufficiently to counteract the increase in labor cost. We have seen that, other things being equal, an increase of the program is income creating and so a given rise of wages may be offset. Nevertheless, a series of widespread wage increases which were followed by tax increases might defeat the policy by causing hoarding and the holding of idle investment balances.

The second course open to the policy authority is to obtain

the coöperation of labor leaders. The spread of unions increases not only the power but also the responsibilities of their leaders. The income creation benefits the unions by raising membership and therefore the amount paid in dues, even though there is no increase in wages. The leaders might be induced to demand no more than these benefits in return for carrying out the program, with the increase in taxation confined to the middle- and higher-income groups. The program could thus operate freely.

The liquidity of the banking system which has been assumed depends in reality upon many institutional factors. The relative size of the monetary reserve, the operations of the central bank and treasury, the existence of secondary reserves, and the position of the foreign balance on current account are some of the items. Any combination of these factors may cause a decline in the liquidity of the banks which may have detrimental results upon income creation. During the period of adjustment, while income is rising, new credit must be continually created in each income period. This new credit may come from hoarding of individuals, corporations, and government, or from new bank loans which are apt to be the more important source. Once income stops rising and levels off, no new credit is needed unless to offset some spontaneous credit destruction. When income remains constant, there is just enough voluntary saving in the current period to finance investment in the next period. Once the income creation has become constant at full employment it is self-perpetuating, and some deflationary impact on the banks is necessary to cause income destruction. During the period of adjustment, however, no deflationary juncture is necessary. Income creation is checked if the limit of credit expansion is reached before income levels off. There are two courses open to the policy authority.

First, the appropriate central bank action may be sought to keep money easy and rates low. The efficacy of this solution, of course, depends upon the fundamental monetary position. A prolonged unfavorable balance of payments is difficult to remedy by central bank action alone. Nevertheless, the mere absence of sufficient metal reserves, or the lack of enough member bank deposits with the Federal Reserve, could be overcome

by monetary measures. Income creation by means of taxation must then be integrated with monetary policy.

The second course which may be open to the policy authority arises under a program of lending and investing without interest. The authority may set the ratio between the tax outlay and private investment high enough to attract foreign funds. In general, the supply price of foreign investors is likely to be higher than that of domestic investors, but, to induce them to invest, a higher ratio is necessary. The loss of metal reserves abroad may be offset, or new reserves attracted from abroad.

### MONOPOLISTIC COMPETITION

The scope of monopolistic competition is so broad that it embraces a predominant sector of the modern economy. Pure monopoly is limited to so few instances in the dynamic economy that a more inclusive analysis is desirable. Space, however, does not permit the discussion of the many combinations which are possible under monopolistic competition. Since the immediate problem is to learn the influence of monopolistic competition upon income creation by taxation, the depression and deflation aspect of the general problem is omitted.<sup>4</sup> This means that the monopolistic practice of price maintenance over long periods requires only brief treatment. The deflationary reactions of this practice are not a part of this immediate problem.

When the analysis starts with prolonged unemployment, the progressive self-reinforcing deflation is over (by hypothesis). The depressing influence of monopolistic price maintenance either has been worked off in time or is offset by opposite forces. This condition must exist, because income is assumed to remain constant in underemployment equilibrium. These observations do not deny that in this situation a reduction of the monopolistic prices would increase output, employment, and income, if there were no secondary repercussions.<sup>5</sup> This deflationary aspect of price maintenance is present in prolonged unemployment. What is the influence of price maintenance during the income creation? Monopolistic output must increase as fast as competitive production or faster. As long as there are efficient resources of all kinds available to all producers, the rate of expansion of

production is the same in both monopolistic and in competitive industries. In the former, output must increase proportionally to the growth in income to maintain selling prices. In the latter, the available supplies of idle agents permit output to increase equally with income. Not until less efficient resources are tapped need prices rise in competitive industries, which indicates that output is no longer expanding as rapidly as income. In the monopolistic field, however, the growth in production must still keep pace with the increase in income. The conclusion is inescapable that the monopolistic price maintenance is no deterrent to income creation.

While price maintenance is possible only under monopolistic competition, not all monopolistic combinations follow such a rule of thumb in maximizing their profits. Let us analyze the impact of any monopolistic practice which does maximize profit. Such an inquiry has two aspects: (a) determination of monopolistic price after the income creation; and (b) the reaction of the monopolistic competitor to the program of lending and investing tax receipts, without interest, to all borrowers.

When income increases, there is an expansion in demand and the schedule shifts to the right. What price now maximizes the monopolist's profit? Many answers are possible, because the increase in demand may involve a change in the elasticity of the schedule. There is only one situation in which the monopolist benefits by reducing his output. When the income creation causes shift in the demand schedule to be only slight, and the new demand schedule to be less elastic than the old, it may pay the monopolist to diminish his production from the old amount. When the new schedule is more elastic than the old, or if the increase in demand is large, the monopolist benefits by expanding his output, although the special conditions may cause the price to rise or to fall.

In this case, the explanation of the monopolist's reaction is not difficult. If he has set his maximum profit, the new demand schedule which lies to the right of the old approaches it as the schedules fall together, when the elasticity of the new is less than that of the old. If the increase in demand is small, the point of intersection of the new marginal revenue curve with

the curve of marginal cost may thus be to the left of the old equilibrium. The monopolist maximizes his profit by reducing his output. On the other hand, when the new schedule is more elastic than the old it pays the monopolist to enlarge his output, because the two schedules separate more and more to the right of the old price. Likewise, if the increase in demand is large enough, the shift in the marginal revenue curve to the right more than offsets its lower elasticity, and the monopolist increases his profit by expanding his output, even though the new demand schedule is less elastic than the old.<sup>6</sup>

The question arises, is the income creation likely to make the new schedule more or less elastic than the old? The answer would seem to be that the new schedule is more elastic. Income creation raises the purchasing power of the wage earners predominantly. The unemployed and the lowest income group, whom poverty excludes from most markets, are able to enter new markets with their new income. To be sure, the demand for potatoes, salt, and other basic necessities of poverty declines as income increases. Nevertheless, these goods are not likely to be produced under monopolistic competition. Semi-luxuries, when they are branded, and style goods are produced under monopolistic competition, and it is this class of commodity which is likely to feel the greatest increase in demand. If this line of reasoning is correct, the existence of monopolistic competition with its monopolistic price-fixing is not likely to hamper fatally the process of income creation.

The second way in which the monopolist may influence the income-creating power of taxation arises when the government lends and invests tax receipts without interest. If the monopolist's self-interest directs him to abstain from the program, its efficacy is reduced. The coefficient of expansion in private investment would be lowered by the existence of monopoly. The policy authority might, however, raise the ratio of tax outlay to private investment until the monopolist would increase his profit by participation in the program. No such abnormal inducement may be necessary.

In the dynamic economy the monopolistic competitor is not isolated. The buyer's dollar may shift to another commodity be-

cause of changes in selling outlay, product-improvement, techniques of production with price reductions, and in consumer taste. The individual monopolist cannot follow a static policy, although his dynamic course may not be that of the pure competitor. The firm's monopolistic position and its monopoly revenue would disappear in time from external dynamic changes. Those monopolists who adopted the program first might increase their earnings substantially because of the excess of the marginal efficiency of capital over the supply price of investment during the adjustment period. If it is to the immediate advantage of the monopolist to participate in the program, as well as to his long-run self-interest to do so, the operation of the program is not fatally hampered.<sup>7</sup>

This conclusion does not go so far as to suggest that the existence of monopoly has no influence upon income creation. Where the cost conditions are the same as between monopoly and competition the former produces less than the latter. The real income and employment are diminished from what they otherwise might be.<sup>8</sup>

### THE SHORT RUN

The analysis in earlier chapters has been in terms of the long run, partially because short-run complications had to be avoided, and partially because taxation must create income in the long run if short-run deviations are to be overcome. Since the success of this policy has been demonstrated for the long run, the short-run qualifications must be introduced. The proof that the program is successful in the long run is no justification for omitting the immediate reactions, because a new course of events may set in motion changes which lead away from the former long-run equilibrium. The policy authority cannot ignore the immediate reactions to its program; because a succession of short runs may intervene before the beneficial results appear.

The short-run reactions to the initiation of the tax and spending program fall into two general divisions: (*a*) reactions in the consumption function; and (*b*) those in the schedule of the marginal efficiency of capital. All are due to the same cause:

the inability to foresee precisely the influence of taxation. Consumers and investors cannot predict the impact of the new taxation and income creation, and optimistic and pessimistic errors occur which do not cancel out. The course of income creation is likely to be altered, by the initial reaction of consumers and investors, from that which it otherwise would be.

The consumption function may shift up or down. The prospect of income creation and the establishment of a high level of employment remove one of the motives for thrift. The individual may no longer feel the necessity for saving to meet prolonged unemployment. A general reduction of thrift raises the consumption function. On the other hand, the prospect of higher taxation which is to extend indefinitely into the future may cause taxpayers to become more thrifty. They save more in the present to pay future taxes. There is a downward shift in the consumption function.

The question may arise how a change of thrift can be considered a short-run influence. Its effect may extend through many income periods and may never disappear entirely. Such a change in thrift is classified as short run because it breaks the continuity of the consumption function as it was originally drawn. A new force or change in underlying conditions is necessary to the explanation. Such a shift in the consumption function appears suddenly in the short run as a result of the impact of new taxation.

When the consumption function shifts downward, the decline is likely to be only temporary. Since the increase in thrift is to accumulate a fund out of which to meet future taxes, this motive is satisfied when the fund equals the current tax payment. After this point the higher rate of saving is unnecessary, and the consumption pattern can return to normal. If the consumption function should not shift back, some new motive for saving must have developed.

When the consumption function shifts downward as a result of the application of the program, the policy authority can offset this deflation by imposing a higher tax at the outset. Chapters IV and V demonstrated that when the consumption function is constant, the higher the taxation the greater is the income

creation. The question arises, does the consumption function shift downward in direct proportion to the tax? That is, if it declines a given amount for one tax, is the decline twice as much when the tax is doubled? The answer is in the negative. It may be relatively easy to save a small sum, but may involve a real sacrifice to save twice as much. Consumers are likely to resist a lowering of the standard of consumption to which they are accustomed. Habit, tastes, social position, are all sources of strong resistance to an easy increase of saving, even for the rich.<sup>9</sup> If the consumption function does not decline proportionately to the increase in taxation, sufficiently high tax can set in motion income creation and offset the deflationary reduction in consumption.

Let us turn to the reactions in the schedule of the marginal efficiency of capital. These reactions are of two types. First, the acceleration principle shifts the schedule upward (this type is explained under the next topic). Second, the schedule may shift downward because of incorrect expectations as to the impact of the new taxation. There are several factors which may explain why the application of the program may cause investors to lower their anticipations of profit. All these factors tend to shift the schedule downward.

There is, first of all, the popular belief that taxation is deflationary. The people feel that there is a loss of purchasing power when the government forces them to pay taxes. Elected government representatives make many statements which give the same impression, because it is an axiom of politics to avoid taxation in an election year. If it is generally believed that new taxes are deflationary, investors are likely to reflect the same opinion.

Second, investors believe that all kinds of taxes impinge on them because they receive the impact of certain taxes. Individuals may fail to discriminate between those taxes which do and those which do not fall on the income from new investment. This opinion may be due partially to the first factor and partially to the difficulty of determining the incidence of taxation.

Third, the impact of the new taxation may be overestimated. Every businessman and investor may know of the new taxation



and yet be uncertain of its incidence, with the result that each acts as though it would fall on him. The impact of the tax is magnified beyond what it otherwise would be. Of course, in time the pessimistic forecasts are seen to have been exaggerations; investors discover that they have received an unexpected gain.

Fourth, the practical procedure of levying new taxes and spending the receipts creates uncertainties and lags. There is the interval between the proposal of a new tax and its enactment into law. There is the period between the passage of the new law and the collection of the new receipts.

There is likely to be a lag between the receipt of taxes and their expenditure; and when the government lends and invests the receipts, private investors may be slow to take advantage of the program. Thus, the practical carrying-out of income creation by means of taxation may at first create so much uncertainty and so many lags that investors' expectations for profit fall.

These four factors operate only in the short run. In time the new law is operative and tax receipts and outlays are synchronized. The pessimistic forecasts prove incorrect. The failure to judge the tax incidence and the popular expectation of deflation disappear as income creation gathers momentum. The program is still seen to operate, albeit slowly. Nevertheless, this slowness is a weakness which the policy authority can avoid by employing government deficit spending over the short run.

### THE ACCELERATION PRINCIPLE

The acceleration principle explains the interaction between consumption and investment. A small increase in consumer demand may require an increase of the durable goods which are necessary to the production of the consumers' goods. The increase in demand for producers' goods depends upon several conditions: (*a*) the extent of excess capacity in these industries, (*b*) available supplies of the agents of production, (*c*) the durability of the producers' goods, and (*d*) the availability of substitutes. When the increase in consumer outlay impinges upon an industry which is operating at capacity, which requires long-lived equipment for which there are no substitutes, and when

there are abundant supplies of the agents, the expansion in investment is several times larger than the growth in consumption. When the reverse situation exists, little or no increase in investment occurs. These conditions may appear in combinations varying from one prolonged unemployment to the next, so that no general rules can be laid down.

Certain observations are, however, possible. It is likely, although not necessary, that during prolonged unemployment the stocks of working capital are reduced from the high level of full employment. The liquidation of inventories and commodity stocks is apt to occur during the severe deflation prior to the underemployment equilibrium. Some of this liquidation removes the speculative excess of the previous boom; but some of it is also a readjustment of working capital to the lower requirements. This interpretation does not imply that all excess stocks have been worked off during prolonged unemployment. Some may exist in particular lines to a greater or less degree. What this interpretation does imply is that inventories in general are smaller, and in many fields may be in the normal proportion to sales.<sup>10</sup>

Another observation is possible. As income rises away from prolonged unemployment, the conditions which govern the acceleration principle become more and more suited to an expansion in investment. Excess capacity disappears in some industries ahead of others. As long as there is excess capacity and no prospect of improvement, the maintenance and replacement of equipment can be postponed. As income increases, it becomes more profitable to make repairs and replacements. Prospects of profit improve with rising income and larger plants become desirable. Thus, as the economy moves away from prolonged unemployment, the leverage which consumption exerts upon investment grows.

The inclusion of the acceleration principle with income creation by means of taxation makes the process uneven and wavelike.<sup>11</sup> We have already seen that two forces have this same influence. They are the general rise of prices as full employment is approached, and the inrush of investors when there is a profit from the lending and investing program. The wave which the

acceleration principle injects aggravates a condition which is already inherent, and this wave operates upon income creation in two ways.

First, as income rises, consumption increases. This is clearly the result when the government devotes the tax outlay to consumption. The sum of individual consumption and the tax outlay must exceed consumption before the tax was imposed. When, however, the government carries out the policy of lending and investing, several income periods must elapse after the program is begun before consumption rises above its original figure. Consumption must increase as soon as available income is larger than total income before the program. As consumption increases, induced investment expands through the acceleration principle. Tax outlay, consumption, induced investment, and income, mutually enlarge one another until the inevitable reversion occurs.

The second way in which the acceleration principle influences income creation by taxation is to counteract and even to reverse the process in the early stages when the lending and investing program is carried out. During the first few income periods, consumption lies below the base period; because available income has been reduced as the tax outlay is loaned and invested, although total income is increasing. Since consumption declines in the earliest periods, induced investment also declines. In other words, there is negative investment which is induced by the acceleration principle. This deflation counteracts the income creation of the taxation and may more than offset it, in which case there is income destruction. If income creation is slow to get started because private investors are reluctant to take advantage of the government program, and if the leverage which the fall in consumption exerts upon induced investment is relatively high, income destruction is the result. It is impossible to estimate a priori what combination of conditions is likely to obtain; and therefore no judgment can be presented for the general case.

If in practice the policy authority could not avoid the possibility of deflation when it initiated the lending and investing program, the efficacy of taxation to create income would be seriously threatened. The policy authority can, however, avoid

income destruction through the acceleration principle by maintaining consumption out of tax receipts. There are two courses open which have this result. (a) The policy authority may raise the taxes sufficiently so that the extra tax outlay plus individual consumption is enough to maintain consumption constant during the first few income periods when the lending and investing program is carried out. As soon as consumption begins to increase as a result of the income creation, the extra tax increase, which was necessary to keep consumption constant, can be done away with; taxes can be reduced. (b) The policy authority can maintain consumption out of the existing tax receipts and not increase taxes. There is, however, a smaller tax outlay available to lend and invest to private enterprise. The rate of expansion in private investment is slowed up, as is the rate of income creation. As consumption begins to grow under the belated impact of income creation, tax receipts can be diverted from consumption to the lending and investing program. The rate of income creation speeds up and finally reaches the rate which obtained before. The possibility of income destruction may thus be avoided by keeping consumption constant. Perhaps the easiest way for the policy authority to maintain consumption would be to run a temporary deficit which can be eliminated as the lending and investing program gets under way. The program is still valid.

Although the policy authority can avoid the negative wave which the acceleration principle injects into income creation, it cannot avoid the positive wave. Income and consumption must rise when the acceleration principle begins to operate in conjunction with the method of creating income by taxation. The combined process increases the rate of income creation from what it would be without the acceleration principle, because the growth of investment and hence the growth of consumption are both speeded up. Nevertheless, this rate of increase in income inevitably diminishes for any one of many reasons. These include the decline in the rate of increase in consumption, the rise of costs faster than selling prices, the realization that income increases only during the adjustment period, the completion of the durable equipment which is constructed under the accelera-

tion principle, and the decline in profit prospects as full employment is approached.

As the rate of increase in consumption slows up, the influence of the acceleration principle upon income creation diminishes. One of two courses may be the result. First, the influence of the acceleration principle may gradually disappear; its power to influence income creation may dwindle away without altering the ultimate income increment. In this case, the acceleration principle causes only a speed-up in income creation during the adjustment period. The acceleration principle does not alter the general pattern of income creation in this case.

Second, the course of income creation may be reversed. Induced investment falls suddenly and the decline is large relative to spontaneous or dynamic investment when the acceleration leverage is high, as in the case of durable equipment. Its construction is confined to a short time and starts and stops abruptly, involving large sums, and injecting a large increment into the income stream. The sharp fall in induced investment may cause consumption to decline in the following income periods, which makes the acceleration principle work in the negative direction.

The policy authority may ignore this income destruction. The method of taxation to create income is still operative, although for the time being it is more than offset by more powerful forces; and providing the correct tax increase and spending program were adopted at the outset, the power of taxation must eventually predominate. In this situation, the downward pressure which the acceleration principle exerts cannot exceed its upward action in previous periods unless new dynamic conditions have been introduced. Its deflationary action comes to an end, and the method of taxation is free to raise income.<sup>12</sup> Of course, the policy authority may prefer to offset the temporary income destruction. It may temporarily increase taxes to maintain consumption. This would tend to check the downward pressure of the acceleration principle. When income creation is once more resumed, the extra increase in taxes should be removed. Whichever course the policy authority chooses to follow, the power of taxation to create income still holds true for the long run, although it may operate with less certainty and precision.

THE SCHEDULE OF THE MARGINAL EFFICIENCY  
OF CAPITAL THROUGH TIME

There is inherent in the previous analysis the assumption that the schedule of the marginal efficiency of capital remains unchanged through time. This assumption arises out of the nature of the multiplier analysis, and is in addition to the previous assumption which eliminated the acceleration principle.

Each multiplier, whether it be the simple, the taxation, or the coefficient multiplier, is an infinite series of increments.<sup>13</sup> The conditions of the series must remain constant through time; and one of the conditions is that the investment increment is unchanged indefinitely. For this to be true, the schedule of the marginal efficiency of capital must remain constant. After the adjustment period each income period is exactly a replica of the next. The question arises, is this permanence possible?

The answer is in the affirmative; it is possible although it is not always and inevitably so. The schedule of the marginal efficiency of capital indicates how much investment is profitable at different supply prices for each income period. For example, at 2 per cent, 50,000 new buildings may be profitable in each income period, and the investment aggregates \$500,000,000 if the average outlay is \$10,000. This periodic investment might continue for fifty years before this opportunity disappeared. Nevertheless, if the life of the buildings is fifty years, the first group must be replaced. In the next period the second group must be replaced. In each period there is a replacement investment which is equal to the original sum. The demand for investment goods remains unchanged.

There is no a priori reason why the replacement investment should coincide either in amount with the original investment or in timing with the disappearance of this investment opportunity. Some investments require no replacement, some only a periodic amount which is small relative to the initial investment, some involve an equal replacement. Investments in extractive industries like mining, forestry, and oil may necessitate a larger replacement investment than the original sum, when less productive resources must be resorted to. There is no necessary correlation between the extent of an investment opportunity and

the length of life of the equipment. Replacement of the original investment may become necessary either before or after the investment opportunity is satisfied. If more of the investment opportunity remains, the possibility that the replacement is less than the original outlay is unimportant. On the other hand if the replacement outlay is less than the original investment, and if the investment opportunities vanish before the replacement is necessary, total expenditure declines.<sup>14</sup> There is income destruction. The assumption that the schedule in the marginal efficiency of capital remains constant indefinitely is not tenable. Does this conclusion make the policy of income creation invalid and impracticable?

The answer on both counts is in the negative. The policy authority can apply the method of taxation under the new position of the schedule just as it did in the first place. Of course, taxes must be increased to offset the income destruction. In fact the policy authority applies the program according to the same rules as before the change, except that the schedule of marginal efficiency of capital has a lower position. Income creation by taxation is no less useful because it may have to be reapplied at some time in the future. The policy authority cannot adopt the policy and expect one application to solve unemployment for eternity. It may have to adapt the program to changing conditions. In the dynamic world, innovations may appear which make the policy unnecessary, in which case the policy authority should abandon it. The possibility, nay the probability, that the marginal efficiency of capital may shift, does not so much invalidate the method of taxation as make its operation uncertain and unpredictable.<sup>15</sup>

### THE FOREIGN BALANCE OF PAYMENTS

The entire foregoing analysis has ignored a certain group of relevant problems. This group includes the interactions of taxation to create income and the foreign balance of payments. If the international repercussions were omitted, the analysis would be incomplete. The reactions in the foreign balance alter the operation of the policy. Only in an absolutely closed economy would the foregoing analysis apply.

There are so many different conditions between countries, which may be combined in so many different ways, that it is impossible to make any complete analysis here. Instead, the reactions in the foreign balance of the country adopting the program are classified in two groups: first, those which make the balance unfavorable; and second, those which make it favorable. In any specific case the policy authority would have to estimate the relative strength of the opposing reactions, if any. Of course the two groups may work to offset each other because they occur simultaneously. On the other hand, one group may predominate at one time, while its supremacy may give way to the other group at a later time, with the result that the foreign balance may show a wave. One combination of the foreign reactions may cause the tax outlay to create a larger ultimate income increment at home, while another combination may create a smaller ultimate income increment at home and raise the level of income abroad. The classification of the reactions in the foreign balance into the two groups makes the revision easier. In brief, an *unfavorable balance* causes the income creation at home to be smaller and raises income abroad. A *favorable balance* enlarges the income creation at home. These reactions may operate in the short run during the adjustment period only, and may not alter the ultimate income increment at home; or they may work over the long run.

The reactions which make the foreign balance unfavorable are the following. First, the imposition of new taxes may cause a flight of capital. The consumption function and the marginal efficiency of capital may shift downward at the outset. There is a flight of capital because of domestic uncertainty, hesitation, and delay. This situation is, however, only temporary. When the income creation is under way at home, the advantages of holding funds abroad may disappear. Not unless the flight of capital creates a shortage of loanable funds does it influence the ultimate income increment.

Second, the income tax may discriminate in favor of foreign investments and of investments which are held by foreigners. If the income from foreign investments is taxed less than the income from home investments, there will be a shift of capital



abroad. The foreign balance may be made unfavorable by a reduction of capital imports, which is caused by the new taxation. When the income from investments in the home country which levies the taxes is paid to foreigners, and when this income is taxed by the home country, the advantage to foreigners of continuing to invest in the country may disappear.<sup>16</sup> In this situation, capital imports decline. Of course this income which is paid to foreigners may be exempted from taxation, in which case the inflow of investments is unaltered.

Third, the imposition of taxes on commodities and property in the home country without equivalent import duties would cause an unfavorable foreign balance. The cost-differential would increase imports, and the home country would lose purchasing power. The country whose exports increase would enjoy income creation, provided the conditions were favorable.

Fourth, the domestic income creation, which is the result of the income-creating power of taxation, may increase imports. The expansion of output at home may necessitate the importation of raw materials and semimanufactures. The increase in income at home enables consumers to purchase luxuries and semiluxuries, as well as to import a larger volume of normal consumers' goods from abroad. This concept is that of the marginal propensity to import; it may remain a constant proportion of the domestic income increment, or it may increase with the growth in the income increment. In either case the countries whose exports are expanded are likely to enjoy income creation unless new offsetting factors arise.<sup>17</sup>

Fifth, the domestic income creation may diminish the country's exports. The increase in income may raise home consumption of goods formerly exported. This transfer may reduce the supply available for export or raise the domestic price, which diminishes foreign purchases. The foreign balance is made unfavorable. The foreign buyers are likely to seek other markets in which to buy instead of hoarding this purchasing power. These other markets, therefore, enjoy income creation as a result of their expanded sales.

Sixth, the income creation abroad which is the result of the fourth or fifth reaction may cause a capital export. The income

expansion abroad may open up new investment opportunities through the acceleration principle of derived demand, and loanable funds in the home country may be attracted abroad. The foreign balance becomes unfavorable.

In contrast to the foregoing reactions are the following ones, which operate to make the foreign balance favorable.<sup>18</sup> First, the income creation abroad which is the result of the above fourth and fifth reactions may cause foreigners to increase their imports from the home country. Either of two situations could create this reaction. (a) Foreigners may have a high marginal propensity to import from the home country, and as their income rises they may buy more in this country. This adjustment may only diminish the unfavorable balance which is the outcome of the fourth, fifth, and sixth reactions above. On the other hand, if the income creation abroad is large as the result of the acceleration principle, the foreign balance may become favorable. (b) The export of capital goods from the home country may be necessary to the expansion in production of the foreign countries, and these exports may be purchased with idle investible foreign funds. This adjustment also may only lessen an unfavorable balance, instead of creating a favorable one.

Second, during the period of adjustment, while domestic income is rising, there are opportunities of speculative profits which may attract funds from abroad. The possibilities of domestic price increases and of profits, as marginal costs rise above the optimum, may attract foreign investment. This inflow will disappear as soon as the domestic income increment fails to increase. The foreign balance will be favorable only during the adjustment period.

Third, the lending of the tax receipts in the home country may attract foreign investment. This reaction may result from one of several situations. (a) During the adjustment period the marginal efficiency of capital exceeds the supply price of investment, for the ratio of the tax outlay to private investment is correct only in the ultimate equilibrium. This differential creates a temporary profit. (b) The policy authority may fix the ratio of the tax outlay to private investment so high that the yield to private investors in the home country is higher than that abroad.

(*c*) When the policy authority determines the correct ultimate ratio, so that domestic investors receive just the normal supply price, foreign funds may still be attracted. During prolonged unemployment there are likely to be idle funds abroad, and foreign investors may prefer to accept the normal supply price in the home country rather than to receive no return at all.

Fourth, the policy in the home country of lending tax receipts may stimulate exports sufficiently to make the foreign balance favorable. (*a*) This policy may lower the domestic costs of production by increasing the size of the typical firm and reducing its average cost curve. These cost reductions may cause the prices of exports to fall; and if the foreign demand is elastic the value of exports increases, making the foreign balance favorable. (*b*) The lending policy may diminish the costs of production and the prices of capital goods which enter the export market for the first time. The situation in *a* is different from that in *b*, for in the former no new commodities enter the export market. There is merely an expansion in demand for the old exports.

In concluding this topic, certain general observations are necessary. The foreign balance cannot remain either favorable or unfavorable indefinitely. The ultimate equilibrium under the method of taxation is influenced by the state of the foreign balance. An unfavorable balance means either a loss of purchasing power, which is taken out of the domestic income stream and which reduces the domestic income increment, or else a loss of idle funds from which income creation might have occurred. A favorable balance increases the domestic income increment. The foreign balance is more likely to be favorable when the home country lends the tax receipts than when it devotes them to consumption. Of the favorable reactions above all but one depend upon the lending program. In the case of all the reactions, favorable and unfavorable, the ultimate income increment is altered in its height, stability, and timing.

## CHAPTER VII

### A COMPARISON OF POLICIES

ALTHOUGH TAXATION CAN RAISE the long-run level in income, the conclusion does not follow that this is the best method of achieving full employment. The advocates of a particular policy are inclined too often to neglect possible alternatives, with the result that there are professional fashions in policies. We must compare income creation by means of taxation with the methods of central bank policy, government deficit spending, and a policy to remove restrictions and limitations upon output.

Space does not permit, nor does the argument require, a complete comparison of these policies. The present purpose is to evaluate the income creating power of taxation by comparing it with these other policies and thus to discover the situation in which this method is the most effective.

#### THE BASES FOR COMPARISON

Doubtless there are many bases for such a comparison; but the present analysis is restricted to four, which may be combined in two groups. One group contains two practical aspects of these policies which concern the administrative difficulties and the opposition to the policy. The other group contains the two aspects of the short and long run. These four bases for comparison may be presented in the form of four questions which must be answered for each of the four policies. What are the administrative difficulties in initiating and carrying out the policy? Does the policy generate opposition and does the opposition, if any, increase or diminish? Is the policy effective in overcoming short-run cyclical unemployment? Is the policy effective in overcoming long-run secular unemployment? It is necessary not only to answer these questions but also to rank the several policies in the order of their answers. In each re-

spect we must judge which is the best and which is the worst. Only in this way is it possible to achieve an over-all policy which integrates the best features of all.<sup>1</sup>

### THE PROBLEM OF ADMINISTRATION

Monetary policy would be impossible without a central bank or some institution, perhaps the treasury, to carry out monetary functions. Once the central bank and its instruments of policy have been established, there are no additional administrative difficulties created by the initiating and carrying out of monetary policy. The central bank exercises most of its controls in the course of its normal functioning to meet seasonal demands and major and minor cycles. Monetary policy which is directed at curing prolonged unemployment uses these same instruments of policy; but to a greater degree, so that there are no new administrative difficulties.

The administrative problem of government deficit spending varies with the nature of the program. When it is for the maintenance of the unemployed as in the case of the dole, there are the eligibility requirements and the payments to the unemployed which must be administered. When the program is for public works which private contractors are to construct, the government must carefully draw up blueprints out of a wide variety of proposals and see that the private contractors carry them out. To be effective the government should maintain a shelf of public works which are planned for prompt execution, or months, if not a year, may be spent in preparation of desirable plans. When the government itself is to construct the public works, the administrative problem before it is clearly larger than in either of the previous instances. The purchase of materials and equipment, the determination of wage rates, and the active supervision of construction are now added to the government's problem of preparing the blueprints.<sup>2</sup>

The financing of the government deficit in and of itself should create no difficulties, provided there is no crisis in the government's credit and the banking system has not broken down. Modern governments frequently float bond issues; the necessary institutions already exist and have a working connection

with the treasury. The financing of a larger current deficit during a major depression is merely the expansion of a common practice.

The administrative difficulties of an antitrust policy arise in the nature of legal procedures. The policy attempts to create a flexible economic system by prosecuting illegal restrictions of trade. Evidence must be collected, cases tried, adverse decisions appealed to higher courts, and an attempt made to prevent future violations. Of course the Justice Department and the legal procedure already exist; but all too often the antitrust division has been understaffed because the administration in office did not wish to carry on an active policy of prosecutions. In this situation even the staff would have to be built up with the loss of time. An antitrust policy does not require a large and costly administrative staff, and one may say without contradiction that its administrative difficulties are not its main weakness.

In the case of creating income by taxation, the administrative difficulties vary not only with the kinds of taxes but also with the manner of spending the receipts. Some taxes are more easily administered than others, depending upon the ease of collection and of evasion, and upon methods of supervision. In general, higher taxes increase the difficulties of administration. On the side of the tax outlay the administrative problem grows more difficult with the complexity of the government spending. When the tax outlay is for the relief of the unemployed the administration is not difficult. When the receipts pay for public works and social improvements constructed under private contract, the supervision is somewhat more complex. When the government constructs its own public works, the administrative problem is the largest of the three instances. Nevertheless, the administrative difficulties of supervising the tax outlay are exactly the same as when the same purpose is carried out through deficit spending. When the receipts are loaned and invested to expand private investment through the existing banking and financial channels, the problem of administration might be left entirely to the private companies in return for a fee or commission. In general, however, the supervision of income creation by means of taxation is likely to be more difficult than deficit spending

because the passage of a new tax law and the collection of the receipts is more of a problem than floating a government bond issue.<sup>3</sup>

A comparison of these four policies — monetary policy, government deficit spending, anti-restrictionist policy, and the method of creating income by taxation — indicates that monetary policy has the least difficult administrative problem and that the taxation has the most difficult one. It is likely that an anti-restrictionist policy is more easily administered than a program of deficit spending.

#### OPPOSITION TO THE POLICY

There is, in general, little or no opposition to a monetary policy which attempts to smooth the cycle. In depression an easy money policy is accepted by all groups, although there are a few economists who might object. The popular criticism of easy money conditions is more likely to be that the policy is not carried on vigorously enough. In boom conditions a tight money policy may incur the opposition of speculators on margin and those member banks which were forced to contract loans. A few economists might feel that brakes were applied too soon; while a few would argue that the action was too late. Such criticisms are, however, too insignificant to influence policy decisions. The conclusion that there is no significant opposition to monetary policy seems justified.

In the case of government deficit spending, the criticism stems from the fact of the deficit and the purposes of spending; and the criticism is likely to increase the longer the policy is continued. As a short-run emergency policy, deficit spending incurs little or no opposition. During depression all economic groups welcome deficit spending as a means of lessening their own ills. The real opposition to the policy comes when the deficit lasts longer than is expected and there is every prospect of its continuing. There is the popular belief that government must balance its budget just as all businesses must; and when there is talk in high places of the deficit continuing, the people become uneasy in mind. The growing national debt raises the problem of increasing future taxes to retire the debt. The prospect of

higher taxes may discourage the desire to invest; and these misgivings are aggravated by the growing interest burden on the expanding debt. There is little wonder that this popular uneasiness is expressed in legislatures and administrative offices as opposition to the policy. One may mention that not all economists agree on the merits of an ever growing debt. There may be added to this group special interests which fear the government's competition through its public works. Business is apt to regard any government construction as a threat to private enterprise because the government sphere of activity might be enlarged. In addition there is a small group of businessmen who may find their costs higher than those of their competitors. They too are likely to object to the method of spending and, without discrimination, to oppose the policy in general. Thus the opposition is likely to grow the longer the policy continues.

The individuals and firms who are prosecuted under the law naturally oppose an antitrust policy. They stand to lose special legal privileges and monopoly power which they have enjoyed in the past. Their objections rightly or wrongly will be presented in the daily press, and as the antitrust prosecutions spread into an increasing number of fields there may develop uncertainty and misgivings as to how far the government is going to go. This uneasiness adds support to the existing opposition. Since the antitrust policy must be prosecuted vigorously in underemployment equilibrium to remove such restrictions, the policy will be criticized for weakening business confidence and for deepening the depression gloom. The objections of special interest, of uneasy businessmen, and of a popular misunderstanding, create a formidable opposition which cannot be ignored.

These three sources are also likely to be the basis of the criticism of income creation by taxation. The opinion is general that higher taxes are deflationary during prolonged unemployment. The special interests upon which the higher taxes may fall can be expected to oppose the program. Analysis of this problem cannot be concluded in such summary fashion because the operation of the method of taxation includes so many different cases. In some of these instances there are advantages to offset, to some degree, the opposition.<sup>4</sup>



In general, when the tax is imposed upon the well-to-do and the receipts are devoted to social improvements enjoyed by the many, those favoring the policy may greatly outnumber the critics. When the receipts are devoted to encouraging private investment, the opposition of some of the critics may disappear. Under the operation of the instrument of taxation, furthermore, available income rises from the level of underemployment equilibrium. After the initial shock even taxpayers' available income increases, and in certain instances may return to or exceed the income level before the tax. These results are exactly the opposite to those of the popular expectation. The initial opposition is likely to diminish somewhat with this unforeseen increase in income.

A comparison of the four policies indicates that monetary policy creates the least opposition of them all. Next, with slightly more objection, is government deficit spending over the short run. It may be said that these two policies have little or no opposition. Comparison of deficit spending for the long run, of antitrust policy, and of taxation, is impossible for the general situation because there are so many special cases within each. Nevertheless, important observations are possible. The opposition to government deficit spending is likely to grow the longer the policy is continued; whereas under the method of taxation, the opposite is more likely to follow. The objections to an antitrust policy are weaker and less significant during a sustained high level in income than during prolonged unemployment. Although these comparisons may seem of no importance as they stand, they fit nicely into an integrated policy.<sup>5</sup>

#### THE SHORT-RUN PROBLEM

The purpose of this and the following topic is to discover which policies are applicable to the short run and which to the long run. Since these terms are so vague, let us define them. The short-run problem of policy as it is used in the following pages is concerned with smoothing the shorter cyclical fluctuations. In contrast, the long-run problem is to raise the level in income. The former considers the income level satisfactory but attempts to lessen the deviations, while the latter is not concerned with

the fluctuations about a norm but does indicate how to raise the norm itself. The distinction may be made in other terms. If the policy authority is confronted with an underemployment equilibrium, it may define the situation as a temporary cyclical depression or as a secular break in the investment trend. Under the former diagnosis the correct policy is to alleviate the immediate condition. Under the latter diagnosis the policy must be to raise the level in income over time.<sup>6</sup>

Monetary policy is designed for the short-run problem. Open market operations, changes in rediscount rates, and alterations in reserve requirements, can be achieved quickly. The influence of the instruments of policy upon the member banks is immediate. The reactions of the money markets and of borrowers in particular are slower and more uncertain. Nevertheless if the situation has been correctly diagnosed as cyclical and temporary, monetary policy vigorously carried out does influence the decisions of borrowers. A restrictionist policy can diminish borrowing in a boom, and an easy money policy does reduce interest rates and improve the liquidity of the member banks in depression, both of which encourage recovery. Without the policy the boom might last longer, which in itself would tend to deepen the depression; and by easing monetary conditions the banks become ready to make loans at low rates sooner than if they had to continue the deflation to achieve this liquidity; hence the cycle is smoothed.

Budget-balancing over the cycle instead of annually is the fiscal approach to smoothing the cycle. The policy may be to accumulate in prosperous times a reserve out of taxes which is used in depression to support the unemployed, or a deficit may be incurred in depression which is paid off in the following prosperity. Whichever course is adopted, the program must be based upon a certain cyclical fluctuation as normal. The tax rates must be set so as to collect a given sum over a period which must be estimated in advance. Likewise the rate of government net spending in depression must be determined at the outset, so that its total net spending over the depression will not exceed this given sum. When the course of economic development coincides with the normal cycle assumed by this cyclical budget

balancing, the peaks of the deviations are reduced. Purchasing power is withdrawn during prosperity and injected during depression, which dampens the fluctuations.

The appearance or disappearance of a strong innovation wave would alter the previous relation of prosperity and depression. Either the tax collections are excessive, which is hard on the taxpayers, or the government net spending in depression is not accounted for in the subsequent prosperity, and the debt grows. In both instances the intrusion of the long-run problem necessitates a change in the short-run policy, but the integration of the short and the long runs must wait until the next chapter.

The essence of a policy to smooth out the cycle is that it starts and stops easily or that it can be turned on and off at will. An antitrust policy cannot be manipulated in this way, and its influence upon the business cycle must operate through its effectiveness in achieving a more flexible price structure. The lag of costs behind selling prices in the upswing and the downswing, and the rigid prices of many monopolistic producers, magnify the fluctuations. The removal of monopolistic price rigidity and bottlenecks in general is unquestionably a step in the right direction and would tend to smooth the cycle. Even to approach this objective, however, an antitrust policy should be carried out in all phases.<sup>7</sup> There is likely to be political pressure to relax the policy in prosperity, whereas in depression popular resentment against big business may initiate proceedings. This course would concentrate the deflationary influences of the policy during depression, which is just the wrong time. The reverse policy, of prosecutions in prosperity and relaxation in depression, would be little better; for the downswing in the absence of an antitrust policy creates its own rigidities and monopolistic restrictions. Hence such a policy must be carried on continually if it is to attempt to smooth the cycle.

There are two main grounds for doubting the effectiveness of an antitrust policy to reach any substantial success in this direction. First, there are many price rigidities which are within the law and cannot be removed by legal procedures. The prices of many durable goods are inflexible. Public utility rates are another group. Railroad rates are inflexible and transportation

costs are a large item in the total cost of many products. Union wage rates are another cost element which is inflexible, at least in the downward direction. A large section of the price structure would still remain rigid. Second, the two basic conditions which are at the foundation of the cycle would be unaltered. The banking system's capacity to create and destroy credit and the instability over time in the demand for durable investment goods would still combine and cause cyclical fluctuations.

We have seen that taxation as an instrument of income creation is likely to operate in a cyclical fashion. This aspect in itself makes this method an unsatisfactory instrument for smoothing the cycle. The deviations induced by the operation of the policy might actually aggravate the normal cycle. But there are additional reasons why it does not meet the short-run problem. First, the power of taxation to create income cannot be put into operation quickly. Time is required for the passage of the necessary legislation and for the collection and dispersal of the tax receipts.<sup>8</sup> Second, the initial impact of taxation may be deflationary. Third, the income increments increase slowly from period to period. The conclusion seems justified that the policy is not suitable as a method of smoothing the cycle.

A comparison of the four policies on the basis of their effectiveness in solving the short-run problem indicates that two are applicable and two are not. Monetary policy and budget-balancing over the minor cycles are suitable instruments of control. Antitrust policy and the method of taxation are not adapted to meet this problem.

### THE LONG-RUN PROBLEM

The distinction between the short-run and long-run problems lies in the level in income. The former assumes the level to be given, while the essence of the latter concerns raising this level. The objective in the short run is to cure a temporary unemployment, while that in the long run is to remove chronic and continuing unemployment. This distinction is necessary in order to make a comparison of the four policies, hence to formulate an integrated policy.

The solution of the long-run problem involves not only raising

the level in income but also supporting the unemployed until full employment is reached. A policy which raises income in the long run, but which in the interim cannot maintain the unemployed, is inadequate. The importance of this additional condition is apparent when it is realized that the solution rests upon current policy and not upon previous action. The starting point of the long-run problem is an underemployment equilibrium in which the unemployment reserves built up in the previous upswing are, or soon will be, exhausted. The policy authority must raise the national income and support the unemployed. We must see how well each of the four policies meets these two tests, that of creating income and that of supporting the unemployed.

In order to raise the level in income from an underemployment equilibrium, monetary policy must achieve either an increase in the average propensity to consume through a shift in the schedule, or an expansion in investment through a reduction in the rate of interest. Easy money measures, which include not only the normal central bank techniques but also raising the price of gold, and the government's guarantee of loans to private borrowers at low rates, improve the member banks' willingness to lend. They would become increasingly liquid and in the long run would prefer to invest instead of building up their idle funds. At least the short-term rates of interest would decline; although the reduction below the underemployment figure would not be large, since the handling costs of the banks must be covered. A larger proportion of total investments are likely to be short term, which would lower the average interest rate. The equilibrium rate or system of rates must be permanently reduced to lift the level in income to full employment.

There are several reasons why a reduction in the rate of interest is likely to increase the average propensity to consume in the long run: (a) the monetary inducement to save is less and the satisfaction from current consumption is relatively higher; (b) insurance premiums become more expensive, interest on savings accounts lower, and charges on checking accounts higher; (c) the lower rate means that the income from investment is smaller, and since this is concentrated in the upper income groups their available income and hence their saving is

reduced; (*d*) it is more difficult for a corporation to accumulate an undistributed surplus, because the earnings from such invested funds mount less rapidly; (*e*) although a rate reduction may cause an increase in saving in the short run in anticipation of a definite expenditure or annuity, there is no permanent increase in the long run for two reasons. In time, when the expenditures fall due, dissaving increases and may exceed the current saving. Also, as long as the increase in saving is invested, there is no loss of income. Individuals are not likely to build their idle saving indefinitely if there are sufficient investment outlets at the reduced interest rate. These reasons indicate why a permanent decline in the equilibrium rate causes an upward shift in the consumption function in the long run.

There are several reasons why a decline in the rate of interest in an underemployment equilibrium expands investment in the long run: (*a*) innovations become profitable and there is a widening of investment into new fields; (*b*) the deepening of capital per unit of output can be extended profitably — that is, more roundabout processes of production are worth while; (*c*) the cost of consumer borrowing is lower, and individual and government borrowing increases in the long run. For these reasons investment expands.

The long-run rise in the consumption function and in investment raises the income level through the multiplier process. Full employment would thus be the eventual result, provided there were no interruptions to the working out of the readjustments.<sup>9</sup>

The working out of this process requires certain necessary conditions. They may be included in the phrase "general confidence" and classified under three specific types. First, individuals must anticipate the future with the same degree of optimism or pessimism as they had prior to the change. If the future appears less hopeful, the consumption function may remain constant instead of rising. Second, investors will not undertake more roundabout processes and bring about a deepening of capital, unless the additional risk which is involved is offset by favorable prospects. Deepening of capital subjects the investor to a greater risk from progress in technique and shifts in demand. Such dynamic changes must be absent from the anticipa-

tions of the future to permit the deepening of capital to take place in the long run.<sup>10</sup> Third, the political horizon cannot be troubled with social reform which heralds greater government interference.<sup>11</sup>

These conditions do not conform to the reality of an underemployment equilibrium and to the course of economic development. Social unrest grows in a period of prolonged unemployment. The future may not appear even as bright as the present. Cost-saving techniques are developed in order to avoid the widespread losses and shifts in consumer tastes occurring as the result of the fall in income. In a word, general confidence does not exist. There is, furthermore, the abstraction from the long-run analysis that there are no cyclical fluctuations. In reality the working out of the long-run process is almost certain to proceed in waves. In the course of the long-run adjustment a depression is almost certain to occur, which temporarily shatters the existing confidence and prolongs the period of adjustment.

The conclusion is unavoidable that at best monetary policy is a slow and uncertain means of overcoming prolonged unemployment. This conclusion bears upon the second test of such a policy, that is, its capacity to maintain the unemployed. Since the income created through monetary policy rises slowly and uncertainly, this policy is entirely incapable of supporting the unemployed during the adjustment back to full employment. To be sure, the income creation alleviates the conditions of some of the idle workers, but many are likely to receive no help. This is the real reason why monetary policy is an unsatisfactory means of overcoming an underemployment equilibrium.

In estimating the long-run effectiveness of an antitrust policy it is imperative to appreciate the limitations of the policy. Setting aside the legal aspects, there remains the fact that many causes of price inflexibility are beyond the reach of this policy. Such prices as public utility rates, government-administered prices, those of durable producers' and consumers' goods, fees and salaries which are fixed by custom, union-administered wage rates, prices of patented and branded products, and the prices of those imports which are controlled by the foreign producers, are inflexible prices which antitrust policy cannot alter. Only

when there has been a violation of the law does this policy remove price restrictions in question. Such illegal price restrictions may be characterized as bottlenecks,<sup>12</sup> but their complete removal would not create a perfectly flexible price system, for the above inflexibilities would still remain.

The question at once arises, can an antitrust policy in this limited sense achieve full employment from an underemployment equilibrium? The answer to this question depends upon the economic extent of the bottlenecks. If they are relatively insignificant in the price system, their removal can raise income but little. On the other hand, if the bottlenecks are numerous and strategically placed in the costs of production, their removal may raise income to full employment. Clearly the economic extent of price rigidities is different in various economies, and no general rule is possible as long as the policy in this limited sense cannot create a genuinely flexible price system. Nevertheless, it is worth while to indicate the tendencies of this policy concerning income creation, even though in a specific situation it may not achieve full employment. Furthermore, such an analysis points the way to a broader policy to create a completely flexible price system.<sup>13</sup>

The results upon the level in income in the long run of the elimination of monopoly prices may be indicated most clearly in terms of three cases. In all three the reduction in the monopoly price as the result of antitrust action influences the consumption function and the schedule of the marginal efficiency of capital.

The following are the three different cases of monopoly price: first, when the fixed prices are confined to finished consumers' goods; second, when the price fixing is on producers' goods; and third, when labor racketeering monopolizes the wage rate in a particular field. Of course, all three or any two are likely to occur simultaneously. The analysis of each must, however, be distinct because the results of the policy are different.

The elimination of the monopoly price in the first case in the long run increases consumption and does not alter investment. The policy raises consumption for two reasons. (a) Monopoly profits are eliminated and, since they are a source of saving,



their removal raises the average propensity to consume. (*b*) The lower prices of consumers' goods increase consumption. In the long run real income consumed increases because the consumption function has an elasticity which is greater than unity, and because there is no reason for individuals to become more liquid. On the side of investment there is no change in the long run. In the short run, additional equipment may be invested in or outside of the monopolized fields, but this increase disappears from the ultimate income equilibrium. The level in income rises during the adjustment period through the operation of the multiplier because of the permanent expansion in consumption, investment remaining constant.

The elimination of monopoly prices for producers' goods in the second case is income-creating in the long run as regards both consumption and investment. The reduction in producers' prices lowers the prices of consumers' goods, which expands consumption along the consumption function; and the removal of monopoly profits raises the average propensity to consume as in the first case. Investment expands because the cost of new investment is lowered. This increase may come about in one of two ways. If the demand for the monopolized capital goods is elastic, the lowered price induces a larger investment. If the demand is inelastic, the lower price for the equipment causes a smaller sum to be invested in this field. This releases saving to be invested elsewhere. There is no reason for an increase of liquidity on the part of individuals, banks, and corporations in the long run as they are already highly liquid. The investment of the released saving lowers the rate of interest, which has the same reactions upon consumption and investment as in the first case. Thus in the second case there is income creation, which raises the level in income through the operation of the multiplier.

The third case, in which the monopolized price is that of labor, is the same as the second except for an offsetting condition in the initial instance. The reduction in the wage rate lowers the income of the workers in question. This loss occurs as soon as the wage reduction is effective, while the income-creating forces operate only slowly to expand consumption and in-

vestment. The cost reduction may not be passed on promptly to consumers, and entrepreneurs may be slow to increase investment through either the decline in the rate of interest or the lowered prices of producers' goods. The income creation does not offset the income loss at the outset of the policy. Either of two results may follow. The economy may reach a new under-employment equilibrium at a lower level of income, or the period of adjustment to the higher ultimate income level may be greatly prolonged. In either event, the antitrust policy is less effective in this case than in the previous two.<sup>14</sup>

The income creation in the first and second cases is more rapid than in the third case. The question nevertheless arises, is this rapid enough to support the unemployed? The answer is certainly in the negative, if they have no other means of maintenance. It takes time for the price reduction to achieve an increase in consumption and/or in investment. Buyers must become aware of the price decline and no further fall can be anticipated. Consumption patterns and investment plans must undergo change. And lastly, the conditions of general confidence must exist before income creation begins. There follows the period in which the level in income rises to the new equilibrium. This may be, or may fall short of, full employment. In any case, time is required to shift the spending patterns and to re-allocate the factors of production which are immobile in the short run.

An antitrust policy, whether in the narrow or the broad sense, has the same weakness as monetary policy. The process is too slow to support the unemployed. Neither policy is satisfactory in this respect, and, in an economy in which the government has this responsibility, neither can be the only policy.

In the case of government deficit spending it is sufficient to recall that, provided the government is willing to incur a large enough current deficit, the level in income rises in the long run to full employment. Furthermore, the longer the policy continues, the larger the debt and the more likely is a political and economic crisis to develop as the result of the policy. The opinion that the policy is subject to political breakdown is strengthened by the knowledge that the course of economic develop-

ment in reality combines short-run cyclical fluctuations about the long-run adjustment. A depression may create a political storm in which the policy of government deficit spending is questioned.<sup>15</sup> If an alternative policy were available, the deficit spending need not be continued indefinitely and the possibility of breakdown could be avoided.

#### A COMPARISON OF THE POLICIES IN THE LONG RUN

Monetary policy and antitrust policy are both weak in that they do not support the unemployed, while both government deficit spending and income creation through taxation do so directly. Under the proper conditions each of the four policies raises the level in income to full employment. Nevertheless, an antitrust policy in the narrow sense may not achieve this objective, and both this and monetary policy are slow and uncertain means of overcoming an underemployment equilibrium. Government deficit spending and the method of income creation through taxation are comparatively more rapid, because they create income initially instead of relying upon the reaction of private initiative to favorable conditions. Additional comparison of these two policies is necessary to discover which is the more powerful income creator.

#### TAXATION VERSUS DEFICIT SPENDING

The basis of measuring the income-creating power of the two policies and of comparing their long-run effectiveness is the ratio of the ultimate income increment to the total government outlay which must be ascribed to the policy. This ratio indicates the power of these two methods to create income, and whichever policy has the higher ratio is the more powerful. There is, however, not one single ratio for each policy but rather a group. Each policy is more or less effective depending upon the environing conditions which may be favorable or unfavorable. There is possible, of course, a large number of combinations of these conditions, and each combination has a ratio. Only a few of the more typical and useful combinations and ratios are set forth in the case of each policy for their comparison. Let us turn to government deficit spending.

Many textbooks set forth the ultimate income increment as the current deficit divided by one minus the marginal propensity of individuals to consume.<sup>16</sup> This statement is an oversimplification for all but elementary students. Although correct, it is too inclusive because the numerator ignores the influence of the interest on the ever growing national debt, and the denominator omits the impact of the tax structure upon the income increment and upon the ultimate income creation. This expression,  $D/(1 - mp)$ , is perhaps more applicable to the government's spending printing-press money which bears no interest, or of the spending of the gold miner's new pay dirt, and if the impact of the tax structure is ignored. In this instance the ratio of the ultimate income increment to the government outlay is  $1/(1 - mp)$ .

The influence of the tax structure upon the ultimate income increment which results from a given current government deficit may be made explicit by substituting the tax multiplier for the simple multiplier. Both are numerically equal when the latter is based on the community's marginal propensity to consume. The greater the impact of the tax structure upon the income increment, the higher is the community's marginal propensity to consume and the larger is the income increment which results from a given deficit. In this situation the ratio of the ultimate income increment to the government outlay, which includes not only the current deficit but also the tax increment, is expressed as  $1/(1 - mp + tmp)$ . In this expression  $t$  is the fraction of the income increment taken by the government from all varieties of incremental taxes. It indicates the impact of the tax structure, which is composed of many taxes. Let us compare the ratios in this instance with those of the previous instance when the items are identical. That is,  $mp$  is the marginal propensity of individuals to consume. When  $t$  is zero, the ratios are the same. When  $t$  is a fraction, the ratio  $1/(1 - mp + tmp)$  is smaller than the ratio  $1/(1 - mp)$ , and as  $t$  approaches 1 the ratio approaches unity. Thus, when the government spending includes not only a current deficit but also a tax increment, it is a less powerful means of income creation than when there is no incremental tax.

When the government deficit spending causes a decline in

private investment, the textbooks indicate it as a leakage which lowers the multiplier through a reduction in the marginal propensity to consume. While this presentation is not incorrect, in my opinion a more effective statement is to indicate the decline in private investment as an offset to the deficit in the multiplier. A decline in private investment is not really a leakage through the consumption function as through an offset to the deficit. In this situation the ratio may be made comparable to those of the previous instance by expressing the reduction in private investment as a fraction of the current deficit and by using the marginal propensity of individuals to consume. The decline in private investment may be written  $BD$ , and the ratio is  $(1 - B)/(1 - mp)$ . This ratio is clearly smaller than  $1/(1 - mp)$ . When the tax multiplier is substituted in the denominator of the fraction, the ratio in this instance is still smaller.

There are reasons why government deficit spending which is to continue indefinitely is likely to dampen the incentive to invest and to diminish spontaneous investment: (a) maladjustments in the cost price structure may be maintained; (b) the ever growing national debt may create the expectation of higher taxes either to retire the debt or to meet the interest charges.<sup>17</sup> The longer this policy continues, and it must continue indefinitely as future development is ruled out of the long run, the larger the national debt. This prospect is almost certain to develop sooner or later in reality, perhaps when a cyclical recession occurs.

While it may not be an error to omit the influence of the interest charges on the growing debt from the short-run analysis of the income creation, it is a gross error to ignore the problem for the long run. An ever recurring deficit entails an ever growing debt and hence a continually increasing interest charge. The interest cost to the government per period exceeds in time the initial current deficit. There are two ways in which the government may meet this growing interest charge: either by borrowing or by taxation. In either instance the power of deficit spending to create income is diminished. Let us explain.

If the initial deficit,  $D$ , is kept constant, and if the growing

interest charge is paid out of borrowing, an ever increasing proportion of the government's current spending is paid to the bondholders as interest. Their marginal propensity to consume is lower than that of individuals as a whole when the income increment is distributed normally.<sup>18</sup> A diminishing share of the current deficit goes to the formerly unemployed whose marginal propensity is high. An increasing share goes to the rich whose propensity is low, and to trusts, insurance companies, banks, and corporations which may not pay out the interest. If they do, the rich are likely to receive a large proportion as dividends. This practice also reduces the propensity to consume. Eventually the entire current deficit is paid to the bondholders as interest. In this instance the ratio is  $(1 + mp_b - mp)/(1 - mp)$ , where  $mp_b$  is the marginal propensity of the bondholders, and  $mp$  is the marginal propensity of individuals as above. The ratio is smaller than in the initial instance and the income-creating power of the deficit is reduced.

There is an even more fundamental weakness to a policy of ever increasing deficit spending to meet the interest charge on the growing debt: that is, inflation.<sup>19</sup> After the current deficit is paid entirely as interest to the bondholders, there may be a constant income level at full employment. But the interest charge will continue to increase; and since this is paid out of new borrowing, prices must rise indefinitely. This result condemns such a policy where the real income grows less rapidly than the interest payment.

There remains the instance in which the interest charge is met with higher taxation. A complete analysis would include the imposition of many different kinds of taxes as well as the influence of the deficit. Such an analysis would be complicated and is essentially unnecessary for the present purpose.<sup>20</sup> Let us confine the discussion to the unique case in which the recipients of interest pay the higher taxes. This is the ideal objective which is often suggested but which is as often held to be impossible. Let us assume also that the increasing taxation causes no reduction in private investment, and that the interest payment is paid initially by borrowing. The initial deficit, which includes no interest payment, raises the available income through the multi-

plier, and the additional borrowing to meet the mounting interest charge merely creates the income for financing the taxation. The additional borrowing merely finances the excess in the interest due over the tax receipts from the previous period, which is because the interest charge is continually rising while the tax receipts lag by one period. Income increases indefinitely, but there is no danger of inflation, because the increase merely finances the growing debt. Available income is constant after the ultimate increment in available income is reached, which is the result of the initial deficit and the multiplier. If  $y$  states the available income increment,  $D$  the initial deficit which continues indefinitely, and  $R$  the interest due in the period, the power to create income is written  $y/(D + R)$ . This ratio slowly declines as  $R$  increases because  $y$  and  $D$  are constant. The longer the policy continues, the smaller is the ratio. The power to create available income falls. If the numerator includes the increase in financial income to meet the interest as well as the available income increment, the ratio becomes  $(y + R)/(D + R)$ ; and as  $R$  increases, the ratio declines toward one. In the long run both of these ratios are smaller than  $1/(1 - mp)$  because the latter is larger than one.

A series of examples may be helpful in explaining the foregoing discussion of government deficit spending. If the marginal propensity of individuals to consume is  $2/3$  and the gold miners spend in each successive period \$1 billion of newly mined gold, the ultimate income increment is \$3 billion. If the initial government deficit is \$1 billion, and if the interest payment is ignored, the ultimate income increment is the same and the power of the deficit to create income is in the ratio of 3 to 1. This result is approximately correct at the end of a few years of deficits, but what of the interest charge at the end of twenty-five years when the government has to pay 4 per cent? If there has been an annual deficit of \$1 billion, the debt is \$25 billion and the current interest payment amounts to \$1 billion. The entire deficit is paid to the bondholders as interest. Let us assume that their marginal propensity to consume is  $1/3$ . In this situation, only  $1/3$  of each billion which the government spends in every period becomes available income and is subject to the operation

of the average marginal propensity to consume,  $2/3$ . In this situation the ultimate income increment may be expressed as

$$1 + \frac{1/3}{1 - 2/3},$$

which becomes 2. The ratio of the income increment to the deficit is now 2 to 1 instead of 3 to 1. In addition, it is impossible for the government to limit its deficit to \$1 billion from now on, since 4 per cent of any debt larger than \$25 billion amounts to more than \$1 billion.

Let us assume that the initial government borrowing is maintained at \$1 billion and that the growing interest payment is met by raising the deficit. At the end of twenty-five years, with interest at 4 per cent, the government's deficit is \$2 billion, one of which goes directly into the income stream and one of which goes first to the bondholders, who spend only  $1/3$  of it. There are two income-creating streams: the initial deficit, \$1 billion, and the other, the interest payment of an equal amount. The ultimate income increment for the former is 3 and for the latter is 2. The income-creating power of the total deficit is in the ratio 2.5 to 1. This is, however, an overstatement, because the total debt at the end of twenty-five years is more than \$25 billion because of the inclusion of the interest charge. In addition, the longer the policy is continued, the lower is the ratio, because a larger share of the deficit goes to the bondholders who have a low marginal propensity to consume. The longer the long run, the less powerful is the deficit to create income.

Let us assume that the bondholders have to pay increasing taxes which just equal their growing interest payment. With a marginal propensity of individuals to consume of  $2/3$  and an initial deficit of \$1 billion, the ultimate available income increment is \$3 billion. It is to be remembered that the interest payment is initially met by a creation of income. The ratio is  $3/(1 + R)$ . The denominator is the deficit plus the growing tax receipts,  $R$ , which are paid to bondholders. This ratio slowly declines as  $R$  increases with the growing debt, the longer the policy is continued. At the end of twenty-five years the ratio is down to 1.5 to 1.



The longer the policy of deficit spending continues, the greater is the influence of the interest charge upon the income creation, and the weaker is the policy. It becomes a less powerful instrument to create income. There is a growing possibility that private investment may be discouraged; and a political and banking crisis may develop.<sup>21</sup> Of course if either or both of these contingencies should develop, the income-creating power of the deficit would be greatly reduced.

The question now arises, is income creation through taxation a more powerful instrument? There is no need to repeat what has already been said, and it is not necessary to include all of the cases which fall under this policy. The single instance of progressive taxation of a mild variety is sufficient.

In order to make the comparison between deficit spending and taxation, the same marginal propensity of individuals is assumed for each, and numerical examples are worked out as a basis of comparison. In all examples, the income distribution is in halves and the income tax confined to the upper group. The income level before the policy is \$120 billion, the average propensity 90 per cent, the average marginal propensity  $2/3$ , and the marginal propensity of the upper group  $1/3$ .

In the first instance, the schedule of the marginal efficiency of capital has an elasticity of unity and the supply schedule is horizontal. The ratio which indicates the power to create income is  $1.4/(1 - 0.3t)$ . As  $t$  increases, the ratio rises and approaches 2 to 1 as an upper limit.<sup>22</sup>

In the second instance, when there is no change in investment as a result of the tax, the ratio is 2 to 1 no matter how high the tax.

In the third instance, when the tax receipts are loaned to expand private investment, some value for  $K$  must be assumed. Let it be 2 for all values of  $t$ , although this is unrealistic. In this instance the ratio is  $13.5/(1 + 5.75t)$ . The smaller  $t$ , the higher is the ratio, which rises to 13.5 when  $t$  is zero. As  $t$  rises, the ratio approaches 2 to 1 when  $t$  is 100 per cent.

An important conclusion follows from this analysis. When the rate of technical progress is less than the rate of interest on the government debt, income creation by taxation is an in-

strument preferable to government deficit spending. When the deficit spending is to pay the interest on the growing debt, the result is an indefinite rise in prices; and before the price rise sets in, the ratio of the income increment to the current deficit declines and may become less than the ratio which is the result of taxation. When the interest is paid out of taxes which in turn are paid from the creation of financial income, the ratio either approaches one as a limit or a figure less than one, zero. The method of taxation in contrast, avoids rising prices on the one hand, and is a more powerful means of creating income on the other when the taxation takes only a mild form of progression. In addition, this program avoids the possibility of an economic and political crisis developing as a result of the policy.<sup>23</sup>

Although we conclude that taxation to create income is to be preferred to government deficit spending in the long run when there is insufficient technological progress, the conclusion that deficit spending has no place in an integrated policy is unwarranted. Deficit spending in the short run which gives way to taxation in the long run is an integral part of an inclusive policy.

## CHAPTER VIII

### AN OVER-ALL POLICY

ALTHOUGH ALL ECONOMISTS do not agree upon the emphasis which should be placed on the various policies of income creation, many agree that careful integration of two or more is necessary to achieve full employment. The purpose of this chapter is to formulate an over-all policy which combines the best features of each of the specific programs. Such a policy must meet the problems which arise in the course not only of the minor and the major cycles but also in the course of a rising income. Nevertheless, economic development creates such uncertain and unpredictable situations that an over-all policy can only be outlined. Economists would agree that it must be flexible. There would also be a high degree of unanimity upon the reasons why it is needed. There are three main reasons for this opinion: one historical, one practical, and one theoretical.

#### THE NEED FOR AN OVER-ALL POLICY

Economic history indicates that economic development proceeds in waves of differing duration and amplitude. The business cycle is an irregular and uneven phenomenon which cannot be forecast with accuracy. If it could be, the profit motive would drive private enterprise to counter-speculation and the cycle would be smoothed out.<sup>1</sup> History indicates short and long waves, mild and severe depressions. It is obvious that a policy which is satisfactory to meet a short period of unemployment, for perhaps a year in which no one individual is out of work for more than six months, would be less satisfactory for a period of five to eight years. There should be distinct policies for minor and major depressions.

The practical reason why an over-all policy is necessary to achieve full employment is that neither monetary policy, anti-

trust measures, deficit spending, nor taxation is alone satisfactory. An integrated combination of all four is necessary in the modern economy with its reliance upon deposit banking, with its monopolistic and oligopolistic competition, with its large proportion of industrial workers who cannot maintain themselves when unemployed, and with its periods of prolonged unemployment. Central bank policy and antitrust measures do not support the unemployed and must be supplemented with either deficit spending or income creation through taxation, or both. Likewise the latter two are dependent upon the former two. Extensive monopolistic restrictions reduce the effectiveness of both types of fiscal policy, and neither type can create income without the coöperation of both the central bank and the member banks. These observations should be clear, and the previous chapter has indicated that no one policy is supreme. It remains for this chapter to integrate them into a whole which meets the contingencies of the modern economy.

The last reason for an over-all policy stems from the theory of economic development and concerns encouraging innovation during depression.<sup>2</sup> Full employment rests upon a high level of consumption and investment, and the latter, being composed in part of dynamic investment, draws the former after it. Dynamic investment rests upon the entrepreneurs' willingness to undertake innovation. Policy must encourage the entrepreneur during depression. The prospects for profit must warrant his assumption of the risks of investment, and no one of the four policies is able to brighten the profit prospects in all depressions as well as an integration of the four.

Monetary policy and antitrust measures fail in depression to support the unemployed who naturally turn to political expedients. The political horizon may rapidly develop wildcat cures which obscure the entrepreneurs' economic forecasts. In addition, antitrust measures are likely to raise legal uncertainties which increase the risks of innovation. Such measures cannot easily be turned on or off, and the illegal acts should be made as clear and obvious as possible. Prolonged and continued deficit spending raises uncertainties about the future. Creating income by taxation is subject to questioning, at least for the short run.

These uncertainties, which are the result of specific policies and which discourage the undertaking of new investments, may be diminished and perhaps eliminated through an integrated overall policy.

#### A REASONABLE OBJECTIVE

The objective as set forth at the outset of this essay is the cure of prolonged unemployment. This objective must now be related to the general problem of controlling the business cycle. Too often the former is confused with the latter, the elimination of prolonged unemployment being made synonymous with the removal of the business cycle.

There are two reasons why these objectives should be distinguished. The first reason is that, in the private enterprise economy, government policy must lag behind events in the private sector. The mere accumulation and processing of the necessary data upon which policy decisions depend take time. The influence of monetary policy and of those semiautomatic fiscal measures, temporary deficits and unemployment reserve funds, upon the decisions of entrepreneurs and income recipients is slow, and as time elapses the process may become cumulative. The correct diagnosis of unfolding events upon which rest the decisions to increase, to reverse, to leave unchanged existing measures may lag weeks or months behind the private sector. There is also the self-generating reaction of the credit system, the principle of acceleration, innovation waves, and psychological interdependence which cause the private sector at times to gather momentum and make strict control of production, prices, and employment difficult if not impossible. There is virtual certainty that the government policies cannot control the cycle to the extent of eliminating it.

The second reason is that, even if government policy could eliminate the business cycle, it would be unwise to do so. The elimination of prolonged unemployment does not restrict, and may promote, economic development, while complete elimination of the cycle is likely to retard progress.

Changes in techniques of production, in skills of the labor force, in kinds and qualities of natural resources, in tastes and spending propensities, and in the age distribution of the popula-

tion, all introduce shifts in the price structure, in production, and in employment. Firms, industries, and regions may suffer profit reductions and losses as the result of such dynamic changes, while the innovators receive abnormally high profits. When the profits and losses appear simultaneously, workers and capitalists shift from the less to the more profitable fields. Gradually the new equilibrium is established by the fall in profits and wages in the one and their rise in the other. The shift is slow and takes time because labor and capital are immobile.

This is not the only course for economic development, and perhaps it is the more unlikely. Instead of the profits and losses being simultaneous they are successive. The discovery of the new technique, skill, raw material, and precious metals, or the increase in consumer demand, initiates a local prosperity which is transmitted to the whole economy through the credit system, the principle of acceleration, and the spread of optimism, all of which raise the propensities to consume and invest. During the expansion, the old prospers with the new because of the increase in income. The end of the period of gestation concludes the expansion which may have been temporarily interrupted by one of many causes. Investment falls and reduces income. The general profits of the upswing give way to general losses. The depression in the outmoded sector is relatively more severe than in the sector of innovation. Labor and capital must shift over from the old to the new, which requires time. This shift is made more rapidly and the depression is less severe the sooner another innovation develops or the consumption function rises. The introduction of the new necessitates the reallocation of economic resources. This necessity cannot be eliminated without retarding economic development. Instead of eliminating the business cycle, a more reasonable objective is to reduce the suffering which results from it and to facilitate the mobility of labor and capital.<sup>3</sup>

#### POLICY FOR THE MINOR CYCLES

Although minor business cycles are inevitable and serve a useful function, the policy authority must adopt an over-all program which falls into two parts. The first is monetary policy

which is designed to smooth the upper and lower turning points of the cycle. The second is an unemployment reserve fund to accumulate reserves in prosperity out of which to support the unemployed during depression. In general, this policy is a smoothing of adjustments and does not attempt to eliminate the business cycle or to raise the level in income over time.

If the upswing approaches inflationary proportions, the central bank may raise the rediscount rate and reserve requirements, sell securities on the open market, and use indirect means of restricting borrowing. Once the downswing sets in, the central bank should take the opposite measures to ease the money markets and to satisfy the member banks' liquidity preference. The banks may become willing to expand loans as soon as sound borrowers appear.

The unemployment insurance fund should be based upon the minor cycle. The contributions of workers, employers, and of government, the latter being met out of general tax revenue, should accumulate a large enough fund during the average prosperity so that all insured idle workers may receive a standard allowance during the average period of unemployment. The allowance must clearly lie between the wage in prosperity and subsistence. The allowance should last for the average period of unemployment during which the typical worker is idle. The contributions of government, business, and labor may be approximately equal and must not, as a unit, reduce the average propensity to consume with the result that the prosperity is shortened. This may be easier said than done. The government should not handle the reserve fund so that it operates like large open market dealings of the central bank. A possible solution is to hold the unemployed reserve funds as deposits in the member banks, which would be idle during prosperity and whose velocity would increase during depression. This proposal might require the coöperation of the monetary authority as the withdrawal of the deposits in depression might increase the liquidity preference of banks. Such countervailing action is in the course of normal central bank policy.

The question may arise, why cannot this combined policy, which is here applied only to the minor cycle, be relied upon

to control the major cycle as well? In other words, why is this combined policy incomplete? There are several reasons why a more inclusive policy is necessary. First, an unemployment insurance program which is adequate to meet a major depression would certainly impose a heavy deflationary burden during the foregoing high level in income. The 1920's would not have been as prosperous in this country if there had been accumulated a reserve fund sufficiently large to meet the relief needs during the 1930's. Second, the nature of the economy changes and with it the extent of the unemployment. The economy may develop from a self-sufficient agriculture into a specialized industrial pattern. Conditions which influence employment change, such as the rate of population increase, the state of the foreign balance, the extent of the financial system to absorb debt liquidation, the degree of monopolistic restrictions, and general resistance to labor and capital mobility. Third, the insurance principle rests upon the prosperities balancing out the depressions. Economic development is not regular to this degree. During the upswing of long waves the prosperities of the minor cycle are on the average longer than the minor depressions. During the downswing of a long wave the reverse is true. In addition, relatively severe depressions do not always follow prolonged prosperities, witness the depression of the 1890's. Fourth, depressions are the result of not only economic development but also wars and revolutions, and irregular political and natural disturbances. The reciprocal interaction of prosperity and depression may be suddenly broken. Fifth, monetary policy is not sufficiently effective in all depressions to initiate recovery, and the unemployment reserve is likely to be exhausted. If monetary policy could bring revival with certainty, then this combination would be complete in all cycles.<sup>4</sup>

#### POLICY FOR THE MAJOR CYCLE AND THE LONG RUN

There are three aspects to an inclusive long-run policy. One pertains to the course of economic development, one to the need for a continuous antirestrictionist program, and one to the major depression. Each is an integral part of a general policy, the objective of which is to cure prolonged unemployment. To-



gether they form a complete policy which meets the contingencies of economic development.

Economic development progresses in waves which are interlocked. Several minor cycles may occur during one phase of a major cycle. In other words, the minor cycles may occur in a period of high or low level in income. Minor fluctuations must be expected, and therefore monetary policy and unemployment insurance as regards the minor cycle must be ever present aspects of an over-all policy. It is no more possible to forego these two policies than to place entire reliance upon them.

Antirestrictionist measures form the second aspect of the over-all policy. Although this essay is not the place for a complete discussion of all aspects of the policy, a general outline is necessary. Its purpose is to maintain a flexible price system, so that there are no legal and artificial restrictions upon production. The policy should be followed throughout all phases of economic development, and should not be carried out more vigorously by one political party or administration than another. The law and its administration should be as unambiguous as possible. The risks of innovation should not be increased by the possibility of frequent and costly legal battles. Within these general conditions the policy should branch in three directions. The first is along the lines of the Sherman Antitrust Law and its amendments, together with the Supreme Court decisions. No more need here be added concerning this familiar approach.

Secondly, the policy authority should prevent, if possible, the passage of new laws which act as restrictions upon production, and should make recommendations concerning existing laws which have the same result. Particularly during depression, but to a considerable extent at all times, there are attempts to legalize restrictions of output. The N.I.R.A. and the first A.A.A. are cases of restrictive legislation which were fortunately declared unconstitutional. The operation of the patent law is sometimes to restrict production, as when the control of a few patents creates a monopoly which eliminates rival competitors and products. The granting of a patent might be made contingent upon the production of the patented good or upon

further research and experimentation with the process. There is room in the entire field of this second direction for examination of old and new legislation from this point of view.<sup>5</sup>

The third direction in which antirestrictionist measures might move is to induce the public utilities to time their investment during depression. The public utility field is at present under government regulation as to earnings. The general principle is that a private utility company, which is, by its very nature, a monopoly and which also furnishes a public service, is allowed to fix its selling price so that the company earns the competitive rate of return, that is, a fair return on the fair value of the company. There might be added to this principle the proposition that if the private utilities would place their investment when the policy authority asked them to, the government would match the private investment on a fifty-fifty basis without charge, all earnings going to the companies. The private companies would be induced to postpone at least some of their investment from boom to depression. The growth in income, and hence in demand for their services, and the ease of new financing together cause such investment to be placed in prosperity. By applying the method of taxation to transfer some of this investment to depression, the cycle would be smoothed. Of course, not all investment of the private utilities could so be transferred because it is induced rather than dynamic investment. Whatever investment might be shifted would, however, be a smoothing operation. This shifting would, of course, not occur unless the proposition were made to the companies years in advance of the depression. The agreement would have to be made during prosperity. Once the policy authority makes some such offer, the decision, the uncertainty of profit or loss, and the details remain with each private company. This proposition can be offered the private utilities because they are already under government regulation which impinges upon their monopolistic earnings.<sup>6</sup>

The third and final aspect of an over-all policy concerns raising the level in income throughout a minor cycle, or in other words curing prolonged unemployment during the major depression. Specifically, this aspect of the problem develops

when the depression of a minor cycle lasts so long that the unemployment reserve plan breaks down. The previous prosperity may have been unexpectedly short, with the result that the unemployment reserve is not built up to normal; the existing depression may be so widespread that the normal reserve is insufficient; or it may last so long that workers are unable to find employment before the period for which they receive unemployment insurance is over. In each instance the unemployed are virtually helpless and the policy authority is forced to act.

Deficit spending should at once be initiated to finance the relief of the unemployed and to finance a limited public works program which does not compete with the field of true private enterprise outside the sector of public utilities. As rapidly as is administratively possible, public works should replace relief. The current deficit grows because the former is more expensive than the latter. Weekly wages are higher than relief payments, and there is the added cost of materials, equipment, and salaries to workers not on relief. The growing deficit increases the liquidity of banks and corporations<sup>7</sup> and raises income, provided the growing debt has no discouraging reactions upon private investors. This result may be minimized by limiting the public works to those fields in which government has traditionally placed investment, and by making public the plan to replace deficit spending by means of income creation through taxation. Thus the debt grows for only a short period. During the year or two of rising income, the transition from deficit spending to taxation should be politically and administratively easier than if the deficit spending were not resorted to. The previous chapter indicated that the former is a better policy than the latter for the short run. The former helps to bridge over the weaknesses of the latter by initiating the rising income. The previous chapter also indicated that the method of taxation is better in the long run than continuing deficit spending. Thus, by changing from deficit spending as soon as is practical, the best attribute of each is used.<sup>8</sup>

This transfer to income creation by taxation stimulates a normal revival by encouraging economic development. Once the shift is an accomplished fact, entrepreneurs are more will-

ing to innovate than if deficit spending were to continue until an innovation wave made it unnecessary. The method of taxation encourages entrepreneurs in two directions.

The policy authority cannot know in advance the elasticity of the marginal efficiency of capital and therefore must carry on both aspects of this principle simultaneously. The policy authority must allocate some of the tax receipts to pay for the public works program which, in the main, represents individual and social consumption, and the remainder to expand private investment by its lending program. The provision of capital without interest together with a policy of easy money is almost certain to encourage entrepreneurs.<sup>9</sup> Some of the innovations thus started are likely to be unprofitable; but the attempt to introduce them is income-creating, and a few will be profitable. Their success will attract additional investment into the field. There is even the possibility that economic development, which otherwise might not take place until a distant date, may be hurried forward in time;<sup>10</sup> and the innovation wave might need no further government encouragement. Taxes could then be reduced together with the lending program. Whether such optimistic results might follow or not, the lending program is certain to encourage innovation.

The second direction through which the principle stimulates economic development is in the field of psychology. Long-continued deficit spending raises uncertainties about the future. As long as the debt continues to grow, doubts will remain. Once the transition to income creation through taxation has been accomplished, these uncertainties disappear. The tax incidence may be an uncertainty at the outset of the policy; but this too becomes definite. General misgiving gives way to a specific tax incidence. Entrepreneurs can once more make their investment plans in the knowledge that the economic horizon is as clear as it is likely to be. Entrepreneurs may be more optimistic.

This combination of temporary deficit spending and income creation through taxation causes a periodic increment in the debt. There are several minor cycles in the course of a major one; and the increase in the debt need not occur more often than at eight- or ten-year intervals, and then the deficit is

limited to two or three years. The increment in the debt might approximate \$20 to \$25 billion each decade. This increment should not create a "debt problem" in an economy with a rising real and money income,<sup>11</sup> which increases at between 2 and 3 per cent a year. The increment in real income might exceed the increment in the debt, with the result that the ratio of the debt to the national income would decline. If this should be the result there would be no "debt problem."<sup>12</sup>

### A RISING INCOME

To achieve the objective of full employment, an over-all policy must not only lift the level in income but also maintain a rising trend in the long run. The population and the labor force are increasing not in all national economies but in several. Improvements in capital-saving and capital-using techniques cause an increasing output per capita. If money income should remain constant, the growing labor supply and output would cause a downward trend in prices and wages. Unless the economy is flexible, there is likely to be frictional unemployment and a retardation in economic development. The demand of unions for higher money wages; the extent of fixed prices for public utility services; the common practice of rigid prices in monopolistic competition, which lies beyond the reach of anti-trust measures; and the inflexibility of rents and interest; would all cause a lag in the fall of costs behind selling prices. The result would be a reduction in profits which would bring about a slowing-up in economic development. Thus, not only some of the old workers but also some of the increment might become unemployed. To avoid this result, the policy authority should bring about a rising income so that money wages may be constant and real wages rising through the fall in commodity prices. The objective is perhaps a basic minimum, as there are many economists who recommend a rising wage rate sufficient to offset the fall in prices so that an inclusive index remains constant.<sup>13</sup> How is the policy authority to accomplish a rising income?

In general terms, the answer rests upon the nature of the monetary system, for there cannot be income creation without

new money; nevertheless, a flexible price structure is important. Inflexibilities in the cost-price relation would create specific maladjustments which might cause unemployment. A rising income requires an effective antitrust policy as well as the creation of new money. The problem before the policy authority is to achieve a steady flow in new money and in income sufficient to equal the increase in the labor supply.<sup>14</sup>

There are three criticisms of the effectiveness of the gold standard to create sufficient income to achieve full employment at constant wages for the long run. Barring the discovery of new techniques and new gold resources, which are unreliable and unpredictable sources of monetary gold, the supply of monetary gold is not very elastic. Gold production has a low, almost insignificant, effectiveness in directly providing work. The final criticism, which is important because of the existence of the others, is that newly mined gold enters the income stream predominantly through the loan market. The income increment which the gold miners receive is insignificant in comparison with the increment which results from the credit expansion. This expansion, however, depends upon new borrowing which in normal times is composed mainly of private borrowers. When the course of economic development approaches the end of an innovation wave, such borrowers are unresponsive to reductions in interest rates and easing of credit terms. The government is forced either to run a current deficit or to apply income creation through taxation. A prolonged government deficit is subject to all the criticisms which have previously been indicated.

To avoid these weaknesses of the gold standard other commodity standards have been suggested — the silver standard, bimetallism, a combination of gold and silver, and recently a group of raw materials combined in fixed proportions.<sup>15</sup> In the case of such commodity standards the output of the monetary base and likewise the income of the miners are determined by the same factors as in the gold standard. Also if there is a credit superstructure built above the commodity base, the expansion of new credit is a more important source of income creation than is the income of the miners. In the case of the

paper standard, the government may print new money to pay some of its expenses, which would be generally considered unsound financial policy, or there would have to be a credit expansion. The 100 per cent reserve plan depends entirely upon the ability of the banking system to lend new money; but this plan relies upon the appearance of new borrowing at all times, even more than does the present gold standard with its small outlet through the income of the miners.<sup>16</sup> In the final analysis, all of these proposals rest to some extent upon credit creation for the new income necessary to maintain wages constant with a growing labor force.

Over the long run the method of creating income by taxation is a helpful instrument for achieving this credit expansion. When economic development slows up and prolonged unemployment becomes a reality, the policy authority may resort to periodic higher taxation to bring about a rising income. The method operates upon both the demand for and supply of investment; and by keeping the demand in excess of voluntary saving by the necessary credit increment, the desired rise in income is possible. The policy authority, it is to be remembered, conducts both branches of the method of taxation at the same time. Some of the tax increment is devoted to consumption and the remainder to expanding private investment. Out of the tax receipts collected from the middle- and upper-income brackets, a certain fraction, which may be large, is paid out of saving. To devote a part of these receipts for social consumption clearly diminishes voluntary saving; and to lend the remainder without interest increases the demand for investment without altering the supply. Let us examine this feature in more detail.

In an economy with a rising income<sup>17</sup> there are two sources of demand for investment, induced and dynamic investment. The rising income necessarily involves a rising consumption, and an increasing consumption requires additional investment at least in working capital and perhaps in fixed capital as well. Economic progress requires the discovery of new techniques, the application of which may in many instances involve investment. Clearly some induced investment embodies any new techniques which are applicable, and equally clearly much induced

investment involves no new techniques. The two sources of investment may overlap at times and yet be distinct at others. Likewise the proportion which induced investment bears to the total will vary, which is, of course, also true of dynamic investment. In periods of rapid economic development and rising income, dynamic investment is a large share of the total.

The long-run objective of the policy authority is to keep investment in excess of voluntary saving by the credit increment which is necessary for full employment with a growing labor force. In periods of rapid economic development, the taxation should be adapted to restrict induced investment; and on the other hand, when dynamic investment lags induced investment should be encouraged. In the former, there is no danger of an insufficient demand for investment, and the difficulty may be to avoid inflation. Then the policy authority should reduce taxes and withdraw any encouragement to private investment. When dynamic investment lags, the tax rates should be raised and the receipts used for consumption and for expanding private investment. The increase in consumption expands induced investment; and both induced and dynamic investment may be enlarged by lending some of the receipts without interest. There is an increase in demand: first, through the acceleration principle, and second, through income creation by taxation. There is a decline in the supply of voluntary saving when some of the receipts are used to raise consumption above what it was before the tax. Thus the desired excess of investment over voluntary saving may be achieved. When the leverage through the acceleration principle is high, a large fraction of the receipts should be devoted to social consumption. When the demand for dynamic investment is highly elastic, a large fraction of the receipts should be loaned and invested to expand private investment. However, neither branch should be followed to the exclusion of the other. Over the long run, consumption must increase together with the population; and there is always some leverage through the acceleration principle, if only to increase working capital. In the dynamic economy, there is always some invention ready to be tried as an innovation; and without the encouragement of the lending policy, economic de-



velopment might be slower. There may not be a perfect combination of the two branches, but some balance between them is desirable. If by chance the leverage through the acceleration principle and the elasticity in the demand for investment are both high, only a small increase in tax receipts would be necessary and any combination of the two branches would work well enough.

Over the long run, the policy authority should maintain the community's average propensity to consume high and constant. In the short run the consumption function of individuals has a negative slope. Over the long run this consumption function shifts to the right with the development of better products and higher standards of living. Nevertheless, the average propensity of individuals to consume may tend to fall in an economy with a rising income. In such a case, full employment and a rising income depend upon a more rapid growth in dynamic than in induced investment. Although consumption is increasing, saving increases faster. The rising consumption merely keeps induced investment approximately constant, which leaves a growing gap between the supply and demand for investment to be filled by dynamic investment. Thus full employment may become more difficult to achieve with the passage of time. If, however, the average propensity of individuals is constant over time, due to the upward thrust of economic development, the problem is less difficult. The growth in consumption is greater, and hence induced investment is larger. With a constant average propensity, voluntary saving does not increase more rapidly than consumption, and dynamic investment need not grow more rapidly than induced investment. If the consumption function of individuals does not shift sufficiently to keep the average propensity constant, the policy authority may maintain the community's average propensity constant by means of taxation.<sup>18</sup>

The policy authority should not attempt a rising trend in the community's average propensity. This propensity cannot reach 100 per cent in an economy with a rising income which requires new investment. There is the credit increment which must enter investment, unless the government runs an indefinite deficit

or the banks make consumption loans; nor should the community consume 100 per cent of the available income. There is the induced investment which is almost certain to exceed the necessary credit increment. The growth in consumption requires an equal growth in working capital, and in an economy with much fixed capital there must be some increment in equipment also. If, when the community wishes to consume 100 per cent of the available income, induced investment exceeds the credit increment necessary for full employment, voluntary saving should be increased. The policy authority should lower the community's average propensity by the appropriate tax revision. Thus over the long run the community's average propensity should be high, but less than 100 per cent and constant over time.

#### THE TREND IN THE TAX OUTLAY

Since income creation by taxation is to be an integral part of an over-all policy of an income rising sufficiently to employ a growing labor force at constant wages, the question arises, does this necessitate a trend in the total tax outlay which rises more rapidly than the growth in income? The answer is important, for the ultimate success of the policy is at stake. If the trend in the total tax outlay should have to rise more rapidly than that of income, the program would finally break down. At some point the increasing fraction of total income spent as taxes would become so large that private enterprise would collapse.<sup>19</sup> Hence if the method of taxation is to encourage private enterprise and to achieve an income rising sufficiently to keep wages constant, the answer to this question must be in the negative.

There are three reasons why the trend in the tax outlay need not be steeper than that in income. (a) The success of a rising income with full employment which an over-all policy can achieve in the long run removes some of the causes of voluntary saving and shifts the consumption function to the right.<sup>20</sup> (b) Repeated increases in taxes may be made unnecessary by substituting antirestrictionist measures and low interest rates for taxation. (c) A rising trend in income depends fundamentally upon continuing technology which the method of taxation

itself can stimulate and which may cause innovation. Let us examine each reason in more detail.

The assurance of a rising real and money income means that the future may be less uncertain. The fear of prolonged unemployment may be removed and the fear of cyclical idleness lessened. If the government's budget makes some provision for the insecurities of old age and illness, there is less necessity for the individual to save. The consumption function receives an upward thrust through time.

A high and rising level in income which an over-all policy assures makes antirestrictionist measures and low interest rates effective. When effective demand is maintained, a reduction in money rates stimulates new borrowing on the part of either consumers or producers. Likewise when the demand for output as a whole is assured, the removal of restrictions stimulates employment and production. The success of both of these policies rests upon the condition that income is not falling. The reason that they cannot be relied upon to overcome prolonged unemployment is that effective demand is either declining or reduced, and that at such a time the lowering of interest rates and the removal of restrictions do not at once offset uncertainties and risks. If prolonged unemployment were not economically and politically unstable, these policies would in time be effective. Since the method of taxation assures over the long run a high and rising income, low interest rates and anti-restrictionist measures become effective; and these policies can be substituted for ever increasing taxes. In fact, taxes should be reduced as these policies expand income and employment. The trend in the fraction of income taken as taxes need not be upward and may at times fall.

A rising trend in both real and money income fundamentally rests upon continuing technology. New and improved consumers' goods help to raise the consumption function and to sustain a growing income. Likewise, continuing technology, even of the capital saving type which in itself involves no investment, is certain to bring about periods of investment in subordinate fields. The specialization of capital equipment, the growth in production, and the increase in population, mean that improvements which are in themselves capital saving may

necessitate periods of investment: witness the investment brought by the wireless and aviation. Over the long run, furthermore, continuing technology means periods of innovation.<sup>21</sup> A fair share of capital-using improvements is to be expected. Under both of these conditions periods of high level in investment would result. Hence income creation by taxation need not be applied continually. Taxes need be raised only periodically; in periods of expanding private investment they may even be reduced. The trend in the tax outlay does not have to be steeper than that in income.

Although there are these three reasons why the ratio of the tax outlay to income need not increase continually, it may in fact do so for long periods because either monetary and antirestrictionist measures are not substituted for taxation, or because there are other dominant reasons, among which are the following. (*a*) With a rising per capita real income, the demand for certain functions of government, such as the provision of roads and free public education, may increase more rapidly than the demand for privately produced goods. (*b*) There may be a rising trend in the government's participation in production; the government may operate an increasing amount of public utilities and social insurance. (*c*) Government expenses for regulation and supervision of an increasing sector of the economy may rise rapidly as the result of social pressures. (*d*) Certain indispensable government expenses, such as the direct cost of national defense and the service charge on the national debt, may expand suddenly.<sup>22</sup>

Such additions to the budget, which may be financed by an increasing tax outlay, are important to the principle of income creation by taxation. The growth in the tax outlay is almost certainly not neutral as concerns income. Insofar as is possible, increases in tax outlay should be neutral in periods of high and rising income, and income-creating in prolonged unemployment. Deflationary increases should be avoided except in true inflation. Increases should be concentrated in prolonged unemployment where such changes are income creating. To state these objectives is not to imply, however, that they can be easily achieved.

## CHAPTER IX

### CERTAIN MAXIMS OF PUBLIC FINANCE

ALTHOUGH THE ANALYSIS of this entire essay has been concerned with the problem of achieving and maintaining full employment, and particularly with the role which taxation might play, this principle sheds new light on other aspects of public finance. Certain generally accepted maxims, which were developed before the advent of fiscal policy, must be modified as the result of the new findings.

This chapter examines the following maxims. A balanced budget means that the government's outlay is neutral as regards the level in income. Taxes should be levied to some extent according to the ability-to-pay principle, and also the normal running expenses of the government should always be met out of taxes. The way to stop a wartime inflation is to tax away the excess of purchasing power. Since it is sound business practice to borrow for capital formation, it is equally sound for government to borrow to construct durable public works. This maxim leads naturally into the theory of government deficit spending as a cure for prolonged depression. In the course of the analysis of these maxims, more complete answers are to be found to the following questions. When is the balanced budget neutral as regards income? Does the policy of progressive taxation together with a balanced budget stabilize, or amplify, cyclical fluctuations? Can taxation prevent a wartime inflation, and if so, how? Should the government borrow for the construction of public works, and is government deficit spending preferable to the method of taxation as a means of raising income over the long run? The answers to these questions are not as simple as these maxims would suggest.

## NEUTRALITY IN THE GOVERNMENT'S BUDGET

The maxim states that when the government's budget is balanced, the government's outlay is neutral as regards the level in income. The reasoning behind the maxim is that the government is taking no more and no less from the income stream through taxation than it is returning through its expenditures. Hence a balanced budget does not raise or lower total income.<sup>1</sup> Only when the government receives in taxes more or less than it pays out, is the budget not neutral. It is deflationary when tax receipts exceed expenditures, and inflationary in the reverse case.

The analysis of the first five chapters suggests how inaccurate this line of reasoning is likely to be. A definition of the neutrality in the budget might be that the government's tax receipts equal its total outlay and the level in and course of the national income are not altered from what they otherwise would be if the receipts and outlay were zero. Within this definition there are two necessary conditions, not including the obvious one that receipts balance expenditures. (*a*) The total effect upon income of all the different taxes and outlays must be nil. All the various separate impacts of the items in both sides of the budget must cancel out so that there is no final change. And (*b*) the course of the business cycle cannot be changed as a result of the tax structure and the pattern of expenditures. There can be no checking of the upswing or downswing as the result of unemployment insurance and other reserve funds. The cyclical fluctuations in tax receipts must be properly balanced with the correct outlays so that the cyclical pattern of consumption and investment is unchanged. While it is possible that these two necessary conditions may exist, still it is a fortuitous and unique outcome of the interaction of many forces.

There are several observations to be made concerning the first of these conditions. The act of balancing the budget may be neutral as regards income while the budget itself is not neutral. For example, the tax structure may be progressive and the receipts used to support the consumption of the needy, and yet

dynamic investment is unaltered. Hence the propensity of the community to consume is higher, there is no reduction in investment, and income is created.<sup>2</sup> If in this situation the interest rate on the national debt rises and demands an increase in the budget, it can be met by taxation without income creation. If the budget is balanced by taxing the class who are the bondholders and if they pay the tax out of saving, there is likewise no change in income provided there is no reduction in investment. Also, if the budget balancing is at the expense of high-salaried officials, the community's consumption function may remain constant and there be no change in income. In this example the act of balancing the budget may be neutral while the receipts and outlays of the budget itself are positive.

The budget of the federal government, if balanced, is not likely to be neutral. Many economists have believed that the way to raise income is to remove the taxes which repressed investment.<sup>3</sup> They argue that progressive corporation income taxes, the double taxation of dividends, the high rates on capital gains, on high personal incomes and on winnings which are really only offsets to previous losses, not to mention other conditions, all discourage private investment. Such a tax system is hardly neutral.

There is also in the recent budgets provision for unemployment insurance and old age benefits. If the combined effect of the entire budget were neutral, the purpose of these provisions would be defeated.<sup>4</sup> The purpose of unemployment insurance is not merely to take care of the unemployed but also to stabilize the cycle. Besides supporting the aged, old age insurance means a shift in income. As the population grows older the consumption function rises and hence income increases. In these cases the budget is not supposed to be neutral.

In this connection it should be noted that when the reserves of these insurance programs are being either built up or drawn down, the fiscal operations of the government may show unexpected results. When the reserves are being accumulated out of tax receipts, they may be invested in government bonds which are newly issued by the treasury, or debited to the treas-

ury insurance reserve and the receipts then devoted to general expenses. The budget is balanced in the sense that current receipts equal current expenses; and yet the debt, or bookkeeping indebtedness of the government is increasing. The growing debt is clearly neutral as regards income. When the payments out of the insurance reserve exceed the specific tax receipts and the reserve fund is being drawn upon, the sale of the government's bonds to banks does not increase the debt. Nevertheless, it is income creating even when the remainder of the budget is covered by receipts. Careful examination of the operations of such insurance funds is thus needed.<sup>5</sup>

One may be an equal skeptic about the second necessary condition of neutrality in the budget. The income stream is likely to be altered in the course of the business cycle by the impact of the tax structure and the government outlay. Tax receipts vary more over the cycle than the cycle itself. This is due to proportional and progressive taxation and to the high income elasticity of many excise and property taxes. Unless the tax outlay returns to consumption just the same sum which the payment of taxes has withdrawn, there is a change in the community's consumption function. This change is magnified through the acceleration principle; and if there is not an equal and opposite change in dynamic investment, the income stream is altered. If the impact of the budget was to reduce consumption from what it otherwise would be, it is not likely that dynamic investment would increase sufficiently to offset this relative reduction together with the change in induced investment. If dynamic investment did make the necessary change during the upswing, the downswing would almost inevitably be altered. The gestation period and the innovation wave would have matured more rapidly; and the recession would thereby be different. Of course there is a wide variation in budgets, from those which rest mainly on excise taxes to those which are composed of progressive income taxes, and their repercussions upon the income stream are different. At present it would be difficult to set up a tax structure together with a pattern of outlay such that the budget would not influence the cycle.<sup>6</sup>



### A BALANCED NORMAL BUDGET AND PROGRESSIVE TAXATION

The discussion of this topic extends the analysis of the previous paragraphs, for it is the interaction of these two maxims that influences the course of the cycle. There is general agreement on grounds of equity that the tax structure should be progressive at least to some extent. This maxim stems from the ability-to-pay principle,<sup>7</sup> which has long been accepted. There is also the maxim that the current running expenses of the government should be met currently out of taxation.<sup>8</sup> This leaves cyclical unemployment and relief in time of emergency as well as war to be paid for by borrowing. These maxims are apt to be stated separately in different sections of the texts on public finance. The problem which is of immediate concern is, what influence would those two maxims have upon the operation of the economy if both of them were followed? This matter is not one of merely academic interest. When the running expenses of government are from 20 to 30 per cent of the national income, the course of the income stream is likely to be altered if these maxims are followed.

Let us begin the discussion with the simplest case, in which the progressive tax rates are not so high nor so progressive as to change the decisions of investors, and in which the budget is balanced through changes in expenses rather than through changes in the tax rates. These assumptions are not unrealistic for the personal progressive income tax, if not excessive, and if it does not significantly alter investment. Also, the budget is likely to be kept in balance through variations in outlays.

In this case, starting at the bottom of the depression, tax receipts and outlays increase rapidly and the community's consumption function rises more rapidly. Receipts grow because the number of taxpayers increases with the rise in income, because taxpayers move up the scale of progression, and because profits grow relatively to other income groups and are concentrated in the hands of a few taxpayers who are subject to high rates. Hence it is likely that as the upswing continues, a growing amount of taxes are paid out of saving. The outlay is de-

voted predominantly to consumption. Government employees are notoriously low-paid; and as the outlay increases, the government services grow through the employment of more workers at prevailing rates. Thus this fiscal policy causes the community's consumption function to rise. This magnifies the rise in induced investment, which reacts again on consumption with the result that the upswing becomes more rapid. The upper turning point may be reached sooner for several reasons. The elasticity in the supply of credit and other factors of production may have been surpassed. The more rapid rate of progress may react through bottlenecks and inefficiencies. Cost-price changes may be an aggravating factor which brings on the upper turning point sooner.

What has just been said about the upswing may be applied in reverse for the downswing. In general the rapid fall in receipts, met by the reduction of outlay, either by discharging government employees or by cutting their salaries, aggravates the deflation. Thus when the fiscal policy is based upon these two maxims, it intensifies the cycle under these conditions.

Let us examine the other cases which are possible when the assumptions of the previous one are lifted. When the tax rates are so high and of such a nature that investors include them in the supply price, the rate of growth in investment is checked. This tends to smooth down the cycle; for investment is reduced at the upper turning point and encouraged at the lower one. The danger in this situation is that the impact of the tax structure upon investment is so discouraging that the upswing is checked before it reaches full employment. There is also the case in which the tax structure does not impinge upon the supply price of investors, and in which tax rates are changed enough to balance the budget rather than letting the tax outlay vary. This, too, tends to smooth out the cycle; for the consumption function is more stable and the variations in induced investment are less. There is the remaining case, in which the tax outlay is kept constant by offsetting changes in rates, and in which they impinge upon the supply price of investors. In this situation the reactions tend to offset one another. While the rate reduction in the upswing stabilizes the consumption

function, it encourages investment, and vice versa in the downswing.

There are several aspects of the general conclusion to which this discussion leads. These two maxims cannot be followed blindly and independently without producing undesirable results. One way leads to an intensification of the cycle, another toward stagnation; and the remaining two solutions require raising tax rates during the downswing, which is applying a secular cure to a cyclical problem, with uncertain results.

Whether both maxims should be followed at once depends on the nature of the budget. The important factors are the size of the normal budget relative to the national income, and the extent by which the propensity to consume of the recipients of the budget outlay differs from that of the taxpayers. If the budget is small relative to the national income, and if the progressive taxation causes no substantial rise in the community's consumption function, it is safe to adhere to both maxims in any of the above forms. As the budget grows relatively larger, it becomes more difficult to keep the progressive schedule of tax rates from impinging upon the supply price of investors. Thus it becomes necessary to forego some of the progression, and to bring lower income groups into the class of taxpayers when the budget reaches a certain relative size. Additions to the normal budget are of two general kinds: those which are mainly consumed, like welfare expenditures; and those that are largely saved, like interest on the debt. The former are likely to be income creating, while the latter are probably neutral or income destroying. If the budget is predominantly of the former type of outlay, and is not so large that investment is diminished, this type of outlay should be added during depression. To make such additions during prosperity would aggravate the inflationary tendency. In this instance the budget would be balanced by offsetting changes in tax rates so that the cumulative reaction is minimized. The other type of payments, of which the interest on the national debt is characteristic, require a more extensive discussion.

When the debt is so large that the interest is a relatively large item in the normal budget, it may be undesirable to fol-

low both maxims. Interest is a fixed item which can be reduced only through reconversion of the debt. Thus higher taxes in depression may be necessary to collect the same sum out of the smaller income. Since this interest is likely to be saved during the downswing, because the debt is held mainly by businesses and the well-to-do, the new taxation is likely to be neutral or deflationary. There may be no rise in the community's consumption function, and the higher rates may discourage investors. To avert this undesirable result the budget must be unbalanced currently. The normal budget may show a deficit in depression, provided the surplus in prosperity is sufficient not merely to maintain the ratio of the debt to the national income constant but also to cause the ratio to fall. In this way there is a secular decline in the debt, and in the interest charge as well, which places the normal budget in a more favorable position. Of course the worst of all cases would be a normal budget which was so large that real progression in the tax structure was insufficient, and which impinged upon the supply price of investors. The policy authority should do all in its power to prevent the debt from reaching such a large fraction of the normal budget. Hence it may be undesirable to cling rigidly to these two maxims after a long war, for war is the single most important cause of the great relative increase in the national debt.<sup>9</sup>

#### PREVENTING WAR INFLATION BY TAXATION

Wars are usually financed through either an increased issue of paper money, or an expansion in the public debt, which creates new money. At the outset the sale of the bonds may be to individuals and corporations who resell them to the banks or borrow against them to a considerable extent. Also, banks expand their loans to industries to finance the growth in their working capital. There is the creation of bank deposits and the increase in cash in circulation. Thus inflation of prices is the result, because the growth in the money supply impinges upon a dwindling output of consumers' goods. The inflationary pressure builds up with the growth in the war expenses which are due to the price rise and to the spread of total war, and

with the disappearance of more and more consumers' goods from the markets.

The way to avoid this war inflation is, according to this maxim, to finance the war through increased taxation. If the increase in income were taxed away, so runs the argument, consumers would have no more purchasing power and, in truth, even more could be taken in taxes so that demand for consumers' goods could be made equal to the supply at prevailing prices. In this way the government does not increase the money supply, and the two sides of the market for consumers' goods are maintained in balance at the old prices.<sup>10</sup>

The maxim is the wartime counterpart of the universally popular idea that the payment of taxes takes money out of circulation and reduces purchasing power. It must be clear already how inaccurate this general concept is. Let us confine the discussion to the case of war inflation.

There are several errors in this maxim. First, the employment of an increased number of war workers necessitates a rise of wage rates to induce the shift of workers out of civilian production. This increase in income to war workers, even if met by general taxation, is paid to some extent out of saving. Hence there is a rise in the community's consumption function. This expansion in consumer demand will in time impinge upon a dwindling supply; and if unchecked, prices rise. Second, the government must pay the marginal supply price of firms producing war supplies in order to get the maximum output. This gives profits to intramarginal firms, who become sound borrowers. Bank loans expand with the appearance of profitable borrowers, both in consumers' goods and war industries, for working capital and perhaps for short-lived fixed capital. There is thus the necessary credit creation which is indispensable to income creation. Third, the withdrawal from civilian employment of workers into war work and the armed services raises wages in civilian employment. This is passed on to consumers in higher prices either through a reduction of output or through an expansion of money income. The increase in wages is financed in the initial stage either by increased bank loans for working capital or through a reduction in idle deposits which

creates an opportunity for bank loans elsewhere in the investment market. Fourth, the higher wartime taxes do not cause a reduction in investment. In total war most investment is in war industries which can pass the taxes on to the government in higher prices. Hence such investors are not discouraged. Needless to say, these four interact and reënforce one another. Taxation alone cannot prevent war inflation.<sup>11</sup>

There is one respect in which this maxim is correct. The process of inflation which is the result of taxation is likely to be slower than that which follows financing the war by borrowing. To the extent that the former is slower, it is likely also to be less extensive than the latter. The conclusion does not follow that there is little or no choice between the two. Taxation is decidedly preferable. Nevertheless, the government should not rely upon taxation as the only check to war inflation. All the various kinds of direct controls to reallocate resources, including credit, are an integral part; and it is likely that substantial borrowing of voluntary saving is desirable.

This discussion does not lead to the general conclusion that borrowing is the better means of financing war. There are other reasons which tip the balance in favor of taxation insofar as is possible, and in spite of the previous conclusion. Large personal incomes should pay high progressive rates to make more equitable the real burden of the war. War profiteering should be eliminated by taxation. War borrowing creates monetary and fiscal difficulties for the postwar period of readjustment. A large national debt is brought into being, which is readily convertible into cash and remains as a potential source of inflation, and which requires a considerable tax levy merely to service the debt. The proper use of taxation can keep the war debt within manageable proportions and avoid these difficulties.

#### GOVERNMENT BORROWING FOR CAPITAL FORMATION

There is also the opinion that war borrowing is unsound government finance because there is no profitable durable asset back of the debt. During a war the government devotes its credit to noneconomic destructive purposes. This position is

based upon the maxim of public finance that the government should conduct its affairs according to sound business practice.

This maxim holds that it is sound orthodox finance for government to borrow for capital formation. There is no intention to question here the soundness of this maxim, or to imply that borrowing which is not for this purpose may not be sound. The intention is rather to present the case for taxation as a more economical method. The construction of roads, buildings, and other durable public works, according to this maxim, can be financed through borrowing for several reasons. The people who enjoy the use of the finished public capital should, and can, be taxed to pay the interest and principal. There is the backing of useful durable assets behind the government borrowing. The cost can be spread over many years; whereas tax-financing would require either postponed construction, greater foresight, or a heavier tax burden per annum.

This maxim and these supporting reasons are based upon the point of view of the single project. Nowadays a more or less steady stream of public works is a part of the economic process, and to look at each project in isolation is to mistake the operation of the program. When the government borrows, it increases the necessary tax collection by the interest. It can raise the required capital by taxation and avoid this cost. When a recurring public works program is financed by borrowing, the current tax collections not only are unnecessarily large, but also their impact is likely to destroy income or to be neutral. To have a tax-financed program means smaller current tax receipts, which are income creating. What now of the arguments in favor of borrowing?

As to the argument that the persons who enjoy the use of the capital should pay for it, the reply is that they have to pay an unnecessarily large amount and the taxation is a relative burden. As regards the idea that the assets behind the borrowing are sound, the answer is that they could scarcely ever be sold to cover the borrowing. There is no market for public works. As to the view that taxation would concentrate the tax burden within a few years, the reply is that a continuing pro-

gram which resorts to borrowing imposes an even heavier tax burden in the future.

This maxim which propounds the case for legitimate government borrowing for normal capital formation has given rise to another which justifies borrowing for abnormal conditions. Perhaps these are variations of a single maxim, but they are treated here as separate for convenience.<sup>12</sup>

#### GOVERNMENT DEFICIT SPENDING

If it is sound public finance for the government to borrow for capital formation in normal times, the same is even more true in depressions, when the government is employing idle resources. Thus the previous maxim leads logically into the present one, government deficit spending. The latter has become more inclusive than the former, because many hold that the deficit need not be devoted exclusively to capital formation. The timing of public works to smooth down the cycle is the generally accepted form in which the previous maxim is applied to fiscal policy. The maxim that the government should incur a deficit sufficiently large to achieve full employment is less generally held. But it is given such importance in high places in academic and government circles that additional treatment is necessary here.

According to this maxim the government should run a temporary or a continuing deficit, whichever is necessary to achieve full employment; and the debt should be permitted to increase steadily. To be sure, if in the course of economic development private spending is able to achieve full employment and to permit debt retirement, so much the better for the subsequent depression, when the current deficit could be that much larger. This maxim refers primarily to the secular problem of stagnation rather than to the cycle.

There are certain additional comments which should be offered concerning this maxim; and for the sake of completeness those comments which have been presented previously will be repeated. Let us state the old material at the outset.

A continually recurring deficit necessitates a rising debt and



hence an increasing interest charge. When this current charge is financed through borrowing, the income-creating power of the current deficit falls. When the entire deficit goes as interest to the bondholders, the expression which states its power to create income is

$$\frac{1 + mp_b - mp}{1 - mp}$$

where the subscript *b* refers to the marginal propensity of the bondholders and *mp* is the marginal propensity of all groups. The lower the propensity of the bondholders below the average, the less is the power of the deficit to create income. At the same time, the more the inequality in income, the more powerful is income creation by means of taxation. There must be a point, therefore, when the latter is more powerful than the former.

When the growing interest charge is paid by increasing taxes, there are two possible cases. When money income is constant, a growing proportion is transferred to bondholders until they receive all the income. In this case the power of the government outlay to create income steadily diminishes. When money income is made to rise equally with the interest charge, leaving available income constant, the power of the government outlay approaches unity. In both of these cases the impact of the growing taxation is assumed to be neutral. When the rich hold the bonds, which is the usual situation, the increasing taxation may be at the outset neutral; although this may be doubted, for as the taxation grows relatively to national income, it may discourage enterprise.<sup>13</sup>

In addition to these aspects of the income-creating power of the current deficit, there remains the impact of the deficit itself, which further diminishes its effectiveness. Private investors are likely to postpone long-term commitments from either fear of higher taxes to repay the debt, or the prospect that the deficit cannot continue indefinitely and that income will fall when the government outlay is reduced. Private investors may hold back also from fear of government competition, or because the government spending maintains price and cost rigidities and other maladjustments. Such depressing results upon the will-

ingness to invest as follow from an increase in government spending, tax rates being held constant, can be avoided by incurring the deficit through a reduction in tax rates. Nevertheless there is still likely to remain another offset to the income-creating power of the deficit. The tax reduction must result in an equal increase in the consumption of taxpayers, if this offset is to be avoided; and it is more likely that the tax reduction is saved in part by the taxpayers. In this situation the propensity to consume has been reduced.<sup>14</sup>

The method of taxation, on the other hand, eliminates these offsets. There is no mounting debt to create fear of high taxes. The investing program encourages private investment, and can be used to remove maladjustments. The taxing and spending program raises the community's marginal propensity to consume.

An ever growing national debt, the necessary result of continuing deficit spending, becomes in time a factor which may aggravate too rapid changes in income both as regards inflation and deflation. As we have seen, minor depressions are unavoidable, and when one coincides with a banking and political crisis the treasury may have difficulty in financing the growing deficit without resorting to higher interest rates, which tends to lower the prices of government bonds. This is likely to aggravate the crisis and deepen the depression. When the central bank buys government bonds in the open market to prevent the fall in price, new money is created. The power of the central bank to prevent such a fall is, itself, to be questioned, unless the bank's reserves are keeping pace with the debt or the reserve requirements are frequently changed.

An ever growing debt may also be inflationary. Deficit spending can maintain the level in income at full employment, but it cannot itself maintain a rising income per capita without a rise in prices. Even when prices do not rise, the debt may grow more rapidly than income increases as the result of technical progress. In this situation the debt would become a multiple of the income. If exogenous factors should in the future cause prices to rise, the debt may operate to aggravate this inflation. Only a small fraction of the total debt need be converted into

money through the banking system to increase significantly the demand for current output. The elimination of the current deficit may be insufficient to offset this increase. This growth in the money supply is likely to be accompanied by a rise in the velocity of the total stock. If the central bank holds a large fraction of the debt, it may offset this expansion by the sale of government bonds. This would almost certainly lower their prices. The central bank may be unable or unwilling to go far enough, with the result that the debt augments the inflation.<sup>15</sup>

These monetary and fiscal weaknesses of an ever growing debt can, of course, be avoided by limiting the relative size of the debt. The application of income creation by taxation permits the policy authority to do this. While under an integrated policy the debt increases absolutely, it does so only periodically and infrequently. Its absolute size is kept within limits because the method of taxation is a preferable substitute.<sup>16</sup>

This discussion of the maxim of government deficit spending completes the review of the criticisms which have already been presented in previous chapters. The additional material follows.

In its revised form this maxim exhibits three features. The debt cannot exceed twice the national income; the long-run growth in the debt cannot exceed the rate of increase in the income; and there is to be only a periodic deficit to fill in the bottoms of prolonged depressions. When the debt is less than twice the national income, the government's deficit can be larger than twice the growth in income. Thus by balancing the budget in normal times, the government is able to increase its debt rapidly during abnormal depressions. Of course, if the upward thrust of economic development is so strong and so prolonged that some of the debt can be retired without dampening the prosperity, so much the better for the subsequent major depression when the debt could grow, if necessary, that much more.<sup>17</sup>

There seems to be some historical precedent for these features. As a result of the Napoleonic War, the British debt grew to twice the national income; and in the following century the debt was allowed to remain constant while income rose.<sup>18</sup> There

is a long-run upward trend in the real income of the United States of between 2 and 3 per cent annually. The record also indicates that preceding the prolonged depressions there were long periods of good times. These sets of facts suggest that during these good times, while income steadily rises, the government debt need not increase and its debt income ratio steadily improves. When the prolonged depression sets in, the debt can grow more rapidly than the real income, which may continue to increase until the debt-income ratio of two to one is reached.

There are certain questions concerning this form of the maxim which have not yet been answered. What should the correct policy be, if the debt limit of twice the national income has been reached, and if the rate of increase in the debt which is necessary for full employment exceeds that in income? Are not the economic conditions of our time so different from those of the post-Napoleonic War period as to alter the debt limit? What is the analysis that permits the assumption that a 2 or 3 per cent growth in money income follows from the same increase in real income? What happens to the maxim in those countries whose rate of increase in income is less than ours? <sup>19</sup> Since these questions have not been answered, let us confine our criticism to the maxim as stated.

The question becomes, is government deficit spending under these conditions a better instrument of policy than taxation? The answer is in two parts: the one concerns their relative power to create income, and the other deals with their monetary aspects.

Under this form of the maxim the deficit is only periodic, and hence the interest on the debt, which grows periodically, is paid out of taxes during good times. The impact of this taxation and expenditure may be income creating, neutral as regards income, or income destroying, depending upon the given circumstances. There is less likelihood of the first of these results than of the last, with the best that it is reasonable to expect being the neutrality in the taxation.\* This impact of the taxation

\* In order for the interest charge which is tax financed to be income creating, the taxation does not reduce investment, is paid out of saving, and the tax outlay in part is consumed by the interest recipients. The bondholders are likely to be

is also the most reasonable for the sake of the argument. The case for the method of taxation would already have a favorable bias if the taxation which is necessary to pay the interest on the debt were to be income destroying, which is perhaps the most probable outcome.

In order to estimate the income-creating power of this form of deficit spending, it is necessary to examine its strength as though the policy were continuous over the entire cycle. To be sure, the deficit which occurs is only temporary, but if it is to have a lasting result upon the level in income, the debt must grow on the average. Thus at its maximum effectiveness this policy permits an average increase in the debt which is equal

---

the well-to-do, and if the correlation between their investment in government securities and their income is high, it may be impossible to cause the taxation to raise the consumption function. Interest recipients are likely to save as much out of their additional income as taxpayers reduce their saving.

One can imagine a situation where this transfer from taxpayers to bondholders is income creating even though one regards the situation as unrealistic. Government bonds might be concentrated in the hands of the middle and low income groups. Their marginal propensity to consume might be higher than that of the taxpayers who are in the high income brackets. The transfer from the latter to the former would raise income.

There are two reasons why the interest charge is not likely to be income creating. The necessary concentration of the taxation upon the upper income group increases the likelihood that investment may decline as a result. Also a large proportion of the government debt is probably held by banks, insurance and trust companies, and corporations, and only a small fraction of their receipts of interest is likely to get into consumption.

In order for the interest charge to be neutral as regards income, the taxation must cause no fall in investment and no change in the consumption function. When the national income is assumed to rise slowly but steadily from economic progress, investment may not decline even though tax receipts to meet the growing charge are increasing. When the marginal propensities of taxpayers and interest recipients are the same, the interest charge causes no change in the community's consumption. When the ownership of government bonds is closely correlated with individual income and the taxation is equally distributed, the transfer of income is likely to be neutral. To assume this much for the basis of the argument is going farther than some deficit spenders who believe that the interest on the debt is in part a leakage.

It is more likely that the tax structure impinges on the middle- and low-income groups and that the debt is held by the middle and upper groups, so that the transfer is income destroying. In addition the rate of increase in income in some countries may not keep pace with the growing interest charge, so that an increase in taxation is necessary. Since this is a continuing necessity, sooner or later the taxation is likely to reduce investment. Hence the interest charge may well be income destroying.

to twice the assumed growth in income. A growing debt also means a growing tax charge to finance the interest, unless the interest rate is falling fast enough, which is impossible for the long run. Thus we can gauge the income-creating power of this policy by means of the average deficit and the current tax charge.

Since the taxation which is necessary to pay the interest on the debt is taken to be neutral as regards income creation, the income increment which is the result of this policy is determined by the current deficit and the marginal propensity to consume. The power of this policy to create income is measured as the ratio of the income increment to the government outlay.

We can substitute specific values for the marginal propensity to consume and for the interest on the debt and make this ratio more significant. By hypothesis the debt is twice the national income; the increase in the debt, which is identical with the current deficit, is equal to twice the assumed increase in income; that is, the rate of increase is the same for each. When the assumed rate of increase in income equals the rate of interest on the debt, the current deficit equals the interest charge. Thus if the income increment which is the result of the policy is two to four times the current deficit, the ratio is from unity to two to one. If the rate of interest on the debt is more than the assumed increase in income, the ratio becomes smaller, and vice versa. If the rate of interest on the debt is one half the assumed rate of increase in income, the ratio is from 1.33 to 2.66, assuming the multiplier still to be from 2 to 4. The conclusion follows that this policy is only moderately powerful.

As an instrument of income creation, taxation is equal in most cases to the deficit under these conditions. When the rate of interest on the debt equals the rate of increase in the debt, the same volume of tax receipts as would be necessary to pay the interest on the debt under the program of deficit spending, and which would have been neutral as regards income, may under the method of taxation create an income increment two or more times itself. We have already seen that when there is inequality in income, and there is the imposition of progressive taxation of a mild form, the policy of taxation creates approx-

imately twice as much income as the tax receipts which are devoted to consumption. The income increment would be even larger when in the course of economic development the receipts are loaned to expand private investment. In this situation the tax receipts which are collected under the method of taxation can be less than those collected under the deficit spending, when both policies achieve full employment. When the rate of interest on the debt is less than the rate of increase in the debt and in income, taxation is somewhat less effective. Nevertheless it compares favorably to deficit spending under these conditions. The tax receipts might have to be larger under the taxing policy than under the deficit spending; but the former might still remain the more powerful income creator of the two.

There are, furthermore, two considerations which favor taxation to create income over deficit spending. While a debt twice the national income may not discourage the steady progress of technology which is at the basis of the assumed rate of increase in income, still this policy does not encourage it directly. The method of taxation, on the other hand, facilitates economic development through its lending and investing program. There is also the consideration that the debt is a potential source of new money and carries the threat of inflation. If prices should rise for other reasons, bondholders might convert some of these issues into cash which is promptly spent, thus adding to the inflation. While this is less likely to occur with a debt twice the national income than with a debt many times larger, still such a debt is a potential aggravation of inflation. Furthermore, such a conversion of bonds into goods is more likely to occur the lower the rate of interest on the bonds. Investors may accept low rates on government securities only on condition that they are short-term issues and hence soon exchangeable into cash. If the central bank stabilizes the government bond market to induce investors to accept lower rates on long-term securities, the bank may find itself participating directly in the inflationary process. Whatever the inflationary potential of such a debt is, clearly income creation by means of taxation avoids it.

The analysis of this maxim and the comparison of deficit spending with the method of taxation are concerned with the

problem of raising available income to the level of full employment. The foregoing argument becomes clearer when the problem which these two policies must solve is changed to that of preventing a fall in income. This time we start from a satisfactory level in income and assume a deflationary gap which is to be filled either by deficit spending or the policy of taxation. The question is, which is the more powerful policy in the long run?

The analysis of deficit spending again is in terms of the same special cases as those just discussed. It is not possible to compare these two alternatives on any other terms, since there is so wide a variety of possibilities within each method. The basis of comparison is the amount of the government outlay which is necessary in the long run. This outlay will vary with the given conditions.

When deficit spending fills the gap, the government outlay is at first the initial gap. But as the current deficit continues indefinitely into the long run, the debt grows, and with it the interest. This charge must be met by taxation or additional borrowing. In either case the government outlay grows indefinitely; and sooner or later, depending upon the various conditions in each case, this outlay must exceed that which is necessary under taxation. Whatever the outlay under this method, in the long run it is fixed and need not grow. Let us turn to specific cases.

The initial deficit is equal to the deflationary gap; but not very long thereafter, new taxation is necessary to meet the growing interest, which means that the government outlay is increasing. The new taxation may be at the outset neutral as regards income. That is, the new taxes do not alter the consumption function and investment; they are merely a transfer from one pocket to the other of the bondholders. As the policy continues indefinitely, the growing taxation may impinge upon consumption and investment. This causes private spending to fall and widens the deflationary gap, which enlarges the current deficit and raises the rate of growth in the debt, again magnifying the tax burden in the future. If the national income is assumed to be constant, this policy will in time break down.



Let us turn to the case in which the policy achieves a rising income which keeps pace with the growing tax burden. If this could be accomplished by monetary policy, deficit spending would be unnecessary, but deficit spending is required by hypothesis. The initial deficit, which is sufficient to close the gap, is not enough to raise income; hence the deficit must grow. This causes the debt to accumulate at a faster rate, and the necessary taxation to mount faster, too, than at the outset. This taxation may be itself neutral as regards income, although this may be only wishful thinking. Clearly the government outlay grows rapidly.

There is the case in which the government meets the growing interest charge by deficit spending. This spending is not in itself inflationary if real income increases sufficiently. At the outset the interest charge is negligible, but it grows with the debt. The current deficit must almost certainly increase, because the marginal propensity to consume of the bondholders is less than unity. The deficit could not be kept constant and close the deflationary gap. Slowly the interest charge is augmented until it absorbs the entire current deficit. At this point the current deficit is larger than the deflationary gap; and some of the deficit is a leakage. The lower the marginal propensity of the bondholders, the larger is this leakage. The more unequal the distribution in income, the lower their marginal propensity is likely to be below that of the average. In these circumstances the current deficit grows more rapidly once the policy is initiated, and the government outlay exceeds in a shorter space of time that which the method of taxation requires. The same reasons which cause the deficit to increase permit taxation to close the gap with a relatively small government outlay.

In each of these cases, there is the possibility that the government outlay may have to grow even more rapidly in order to close the gap. This possibility arises as the result of the way the government spends the current deficit, and of the expectation of higher taxes to service the growing debt.<sup>20</sup> When the government deficit spending competes with private enterprise, private investment may decline and widen the gap, which in-

creases the government outlay. Also the government spending may aggravate maladjustments in the cost-price structure which themselves reduce private investment with the same result.<sup>21</sup> These aggravations may of course be avoided by the government's reducing taxes<sup>22</sup> and keeping its outlay constant, instead of increasing its total outlay through deficit spending. On the side of the ever growing debt, private investors may anticipate higher taxes either to meet the growing interest or to retire the debt. This might at once decrease the demand and increase the supply of investment funds, and thus widen the gap. In these circumstances the government outlay which is the result of deficit spending will become equal after a shorter lapse of time to that which taxation requires.

There remains the special case of deficit spending in which the debt is limited to twice the national income and the income grows at a steady rate. Without questioning these two conditions again, let us turn at once to the relative size of the government outlay under this policy and under the method of taxation. For simplicity it is assumed that the rate of interest on the debt is equal to the rate of increase in income. Then the long-run current deficit, which is equivalent to the increase in the debt, equals the current tax outlay to meet the interest on the debt when this taxation is neutral as regards income.\* The long-run government outlay which is necessary to close the gap is thus equal to twice the current deficit. If the rate of interest on the debt is higher than the assumed rate of increase in income, the government outlay grows more rapidly, and when the relation between these rates of change is reversed, the conclusion is likewise reversed. For example, when the rate of interest

\* This assumption is crucial for the advocates of deficit spending because the stability of their system rests upon it. When there is no leakage through the payment of interest, the current deficit can remain a constant percentage of the rising income, and the debt income ratio can also remain constant. When any leakage exists through the payment of interest, and this is the more likely result, the current deficit must increase to offset this leakage. Hence the deficit grows more rapidly than income, and since the debt is merely the sum of the deficits, the debt-income ratio grows indefinitely. With a leakage through the payment of interest only the lapse of time is necessary for the government outlay under deficit spending to exceed the tax outlay under income creation by taxation.

is one half that of the increase in income, the government outlay is on the average one and a half times the current deficit in the long run.

The question is, how does this compare with income creation by taxation?

As the reader knows, there is a wide variety of cases, and for comparison let us choose the most unfavorable. In this case the initial income increment is given as  $tY(AP - mp)$ . Of course the multiplier does not operate when the purpose is to fill a gap and prevent a fall in income. This expression states the government outlay which is necessary under taxation, and must be compared with the government outlay under deficit spending.

The current deficit may be written  $2rY$ , where  $r$  is the assumed rate of increase in income. This also states the gap which is to be filled. When the two rates of change are the same, the government outlay under these conditions is  $4rY$ . Let us compare the two methods.

In order to close the gap,  $tY(AP - mp)$  must equal  $2rY$ . When  $(AP - mp)$  equals one half, the government outlay under taxation equals  $4rY$ , which is the same outlay as in the case of deficit spending. Therefore as respects all values of  $(AP - mp)$  greater than one half, the government outlay under the method of taxation is less than under deficit spending under these conditions.

This conclusion should be restated and broadened. The less elastic is the consumption function of individuals, the more likely it becomes that the government outlay which is necessary to close the gap for the long run is less under taxation than under deficit spending. This is particularly true the more unequal the distribution in income and the more progressive the taxation, when the schedule in the marginal efficiency of capital has an elasticity of unity or less. The chances that taxation is the better policy improve with taxes which do not reduce private investment, and with the lending of the receipts to expand private investment. The chances that deficit spending in this special case is the better policy are poorer, the more the gap is widened as a result of the way in which the current deficit is spent and as a result of fear of the growing debt. This policy

is weaker, the higher the rate of interest on the debt and the larger the leakages. It would be incorrect to reach a general conclusion that either method is always able to close the gap in the long run with a smaller government outlay than the other.<sup>23</sup> The given conditions in each instance determine which is the better method.

Nevertheless even when the two outlays are the same under the two methods, a comparison on the basis of real costs shows that the method of taxation may be preferable. Several bases for such a comparison are possible. *A.* What does the government obtain for the respective outlays? In the case of the tax outlay the government purchases real goods and services, while under deficit spending a substantial fraction of the total outlay is a mere transfer payment on interest account. This amount cannot be devoted to real goods and services. *B.* On the basis of opportunity costs the method of taxation requires taxpayers to forego some consumption and investors to forego some outlets for saving. Under deficit spending the government cannot employ the tax receipts which it must devote to the payment of interest for real goods and services. When the rate of interest is relatively high and the debt relatively large the opportunity cost under deficit spending is likely to exceed that required under the method of taxation. *C.* It may be argued whether the government outlay is productive. Clearly the method of taxation has the advantage because the entire outlay may so be employed whereas under deficit spending only the current deficit may be so used. Thus even though the total government outlays may be the same under each method of income creation, the advantage may lie on the side of taxation.

## REFERENCES

### CHAPTER I: INTRODUCTION

1. P. A. Samuelson, "The Simple Mathematics of Income Determination," *Income, Employment, and Public Policy*, pp. 140-143. This analysis ignores the tax-induced decline in investment and minimizes the result of the interest charge in deficit spending.

2. A. H. Hansen, *Fiscal Policy and Business Cycles*, p. 183; A. H. Hansen. "A Note on Fiscal Policy: A Clarification," *American Economic Review*, vol. 35 (1945), p. 408; H. C. Wallich, "Income-Generating Effects of a Balanced Budget," *Quarterly Journal of Economics*, vol. 59 (1944), pp. 89-91.

3. W. H. Beveridge, *Full Employment in a Free Society*, pp. 144, 149, 154, 346-348.

4. B. M. Anderson, "The Road Back to Full Employment," *Financing American Prosperity*, p. 52; Committee on Postwar Tax Policy, *A Tax Program for a Solvent America*, p. 13; F. Machlup, "Summary and Analysis," *Financing American Prosperity*, p. 445.

5. U. S. Bureau of the Census, *Wealth, Debt, Taxation*, p. 29; U. S. Bureau of the Census, *Governmental Finances in the United States: 1942*, p. 13; B. U. Ratchford, "Mr. Domar's 'Burden of the Debt,'" *American Economic Review*, vol. 35 (1945), p. 412.

6. C. L. King, *Public Finance*, p. 30; S. S. Kuznets, *Uses of National Income in Peace and War*, p. 36; H. G. Moulton and others, *Capital Expansion, Employment, and Economic Stability*, p. 272; J. A. Schumpeter, *Capitalism, Socialism, and Democracy*, p. 64; U. S. Federal Reserve Board, *Federal Reserve Bulletin* (1945), p. 1251.

7. W. R. Burgess, *The Reserve Banks and the Money Market*, 1927 ed., pp. 281, 277; U. S. Federal Reserve Board, *Federal Reserve Charts on Bank Credit, Money Rates, and Business*, pp. 22, 23, 24, 25, 28, 29; J. A. Schumpeter, *Business Cycles*, II, 627, 628; T. R. Snavely, "The Colwyn Committee and the Incidence of Income Tax," *Quarterly Journal of Economics*, vol. 42 (1928), p. 666.

8. I refer to Ricardo, Marshall, Taussig, and Pigou. Mill has to be excepted; see J. S. Mill, *Principles of Political Economy*, Book IV, chap. 5, section 1; also Book V, chap. 2, section 7. There are other exceptions, Thomas Chalmers and Sir James Steuart — see Walter Stettner, "Sir James Steuart on the Public Debt," *Quarterly Journal of Economics*, vol. 59 (1945), pp. 451-476, and Thomas Chalmers, "On Political Economy in Connection with the Moral State and Moral Prospects of Society," p. 302,

footnote; in *Works*, vol. XIX, p. 305, footnote; quoted in *Economica*, vol. 12 (1945), by R. O. Roberts, "Thomas Chalmers on the Public Debt," p. 111; T. R. Malthus, *Principles of Political Economy*, pp. 365-368, 418, 419, 423, 424, 436, 437. See also H. M. Groves, *Financing Government*, 1946, p. 619, appendix "Public Finance Literature," by Joseph Rosa.

9. F. W. Taussig, *Principles of Economics*, I, 72, 74; II, 21.

10. D. Ricardo, *The Principles of Political Economy and Taxation*, pp. 94, 95, 97, 101, 102, 105-107, 117, 118, 120, 144, 148, 160, 161, 218; F. W. Taussig, "Capital, Interest, and Diminishing Returns," *Quarterly Journal of Economics*, vol. 22 (1908), pp. 341-343; A. C. Pigou, *A Study in Public Finance*, p. 218.

11. A. C. Pigou, *A Study in Public Finance*, p. 138. Within this framework, Marshall and Pigou recognized that taxes and bounties might be used on grounds of welfare. See A. Marshall, *Principles of Economics*, pp. 475, 719, 794-804; A. C. Pigou, *The Economics of Welfare*, pp. 28-30, 224, 226, 313, 510, 717, 720-736, 737-741, 743, 744; A. C. Pigou, *Industrial Fluctuations*, pp. 35-56, 316, 320, 329-338, 366, also 251; A. C. Pigou, *Socialism vs. Capitalism*, p. 23.

12. E. R. Walker, *From Economic Theory to Policy*, chap. IV, p. 54.

13. E. C. Bratt, *Business Cycles and Forecasting*, p. 392. See also A. H. Hansen, *Fiscal Policy and Business Cycles*, pp. 27-41.

14. J. A. Schumpeter, *The Theory of Economic Development*, p. 57. For theory of entrepreneur, see p. 74 to end of chapter; J. A. Schumpeter, *Capitalism, Socialism, and Democracy*, p. 132.

15. A. H. Hansen, *Fiscal Policy and Business Cycles*, p. 33; A. Sweezy, "Secular Stagnation?" *Postwar Economic Problems*, p. 69.

#### CHAPTER II: THE RESULTS OF TAXING AND SPENDING THE RECEIPTS

1. The following are the articles which I have found helpful: A. G. Buehler, "Public Expenditures and the Incidence of Taxes: Some Theoretical Considerations," *American Economic Review*, vol. 28 (1938), p. 683; J. K. Hall, "Excise Tax Incidence and the Postwar Economy," *American Economic Review*, vol. 32 (supplement, March 1942), p. 83; C. O. Hardy, "Fiscal Policy and the National Income: A Review," *ibid.*, vol. 32 (1942), p. 103; G. Holden, "Incidence of Taxation as an Analytical Concept," *ibid.*, vol. 30 (1940), p. 786; A. P. Lerner, "Discussion of Carl Shoup's, 'Postwar Federal Interest Charge,'" *ibid.*, vol. 34 (supplement, June 1944), p. 88; A. G. Hart, "'Model-Building' and Fiscal Policy," *ibid.*, vol. 35 (1945), p. 531.

2. C. F. Wehrwein, "Taxes and the Consumer," *American Economic Review*, vol. 28 (1938), p. 92; J. A. Leavitt, "Note on 'Taxes and the Consumer,'" *ibid.*, p. 319; H. M. Somers, "Note on 'Taxes and the Consumer,'" *ibid.*, p. 736; P. W. Ellis, "Note on 'Taxes and the Consumer'—A Gestalt Analysis," *ibid.*, vol. 29 (1939), p. 800; H. P. Wald, "A Com-

parative Analysis of Three Variations of Retail Sales Taxes," *ibid.*, vol. 34 (1944), p. 280; D. W. Gilbert, "The Incidence of Sales Taxes: Rejoinder," *Quarterly Journal of Economics*, vol. 54 (1940), p. 686; R. W. Jastram, "The Shifting of Sales Taxes," *ibid.*, p. 673; D. W. Gilbert, "The Shifting of Sales Taxes," *ibid.*, vol. 53 (1939), p. 275.

3. H. D. Simpson, "The Changing Theory of Property Taxation," *American Economic Review*, vol. 29 (1939), p. 453; H. A. Simon, "The Incidence of a Tax on Urban Real Property," *Quarterly Journal of Economics*, vol. 57 (1943), p. 398; A. C. Pigou, *A Study in Public Finance*, p. 142.

4. B. Hall, "'Land' and Taxes on Monopolists," *American Economic Review*, vol. 22 (1932), p. 693; H. George, *Progress and Poverty*, p. 412.

5. J. M. Keynes, *The General Theory of Employment, Interest, and Money*, p. 94; A. C. Pigou, *A Study in Public Finance*, p. 51; J. A. Hobson, *Taxation in the New State*, p. 157.

6. E. E. Oakes, "The Incidence of the General Income Tax," *American Economic Review*, vol. 32 (supplement, March 1942), p. 82.

7. J. K. Butters and J. Lintner, *Effect of Federal Taxes on Growing Enterprises*, pp. 15-16.

8. I. Fisher, "The Double Taxation of Savings," *American Economic Review*, vol. 29 (1939), p. 16; W. L. Crum, "On the Alleged Double Taxation of Savings," *ibid.*, p. 538; R. A. Musgrave, "A Further Note on the Double Taxation of Savings," *ibid.*, p. 549; C. W. Guillebaud, "Income Tax and the 'Double Taxation' of Saving," *Economic Journal*, vol. 45 (1935), p. 490.

9. Z. C. Dickinson, "Incentive Problems in Regulated Capitalism," *American Economic Review*, vol. 34, No. 1, Pt. 2 (supplement, March 1944), p. 162; T. R. Snavely, "The Colwyn Committee and the Incidence of Income Tax," *Quarterly Journal of Economics*, vol. 42 (1928), pp. 666-668.

10. J. M. Keynes, *The General Theory of Employment, Interest, and Money*, pp. 93-95, 110.

11. H. M. Groves, "Personal Versus Corporate Income Taxes," *American Economic Review*, vol. 36 (supplement, 1946), p. 244.

12. L. H. Kimmel, *Postwar Tax Policy and Business Expansion*, p. 10.

13. R. Garver, "The Effect of Taxation on a Monopolist," *American Economic Review*, vol. 22 (1932), p. 463.

14. P. Douglas, *The Theory of Wages*, p. 457.

15. A. H. Hansen, *Fiscal Policy and Business Cycles*, p. 389; R. S. Williams, Jr., "Fiscal Policy and the Propensity to Consume," *Economic Journal*, vol. 55 (1945), p. 396; H. M. Groves, *Production, Jobs, and Taxes*, p. 32; H. L. Lutz, *Guideposts to a Free Economy*, pp. 32-47; H. G. Moulton, and others, *Capital Expansion, Employment, and Economic Stability*, p. 270.

16. H. M. Groves, *Production, Jobs, and Taxes*, pp. 18ff., 24, and "Revising the Postwar Federal Tax System," *American Economic Re-*

view, vol. 34 (supplement, 1944), pp. 27, 39; A. H. Hansen and H. S. Perloff, *State and Local Finance in the National Economy*, p. 247; E. D. Domar and R. A. Musgrave, "Proportional Income Taxation and Risk-Taking," *Quarterly Journal of Economics*, vol. 58 (1944), p. 389; P. D. Bradley, "Direct Effects of a Corporate Income Tax," *Quarterly Journal of Economics*, vol. 56 (1942), p. 638; R. Goode, "The Corporate Income Tax and the Price Level," *American Economic Review*, vol. 35 (1945), p. 53.

17. A. H. Hansen and H. S. Perloff, *State and Local Finance in the National Economy*, p. 244.

18. P. A. Samuelson, "Fiscal Policy and Income Determination," *Quarterly Journal of Economics*, vol. 56 (1942), p. 601.

19. G. Haberler, *Prosperity and Depression*, pp. 304-311; D. McC. Wright, "A Neglected Approach to the Acceleration Principle," *Review of Economic Statistics*, vol. 23 (1941), p. 100.

20. R. Bissell, "Postwar Private Investing and Public Spending," *Postwar Economic Problems*, p. 109; M. A. Copeland, "How to Achieve Full and Stable Employment," *American Economic Review*, vol. 34 (supplement, March 1944), p. 139; R. A. Lester, *Providing for Unemployed Workers in the Transition*, p. 107; F. Machlup, "The Division of Labor Between Government and Private Enterprise," *American Economic Review*, vol. 33 (supplement, 1943), p. 93; D. McC. Wright, *The Creation of Purchasing Power*, pp. 92, 97.

21. R. F. Kahn, "The Relation of Home Investment to Unemployment," *Economic Journal*, vol. 41 (1931), p. 192; R. A. Lester, *Providing for Unemployed Workers in the Transition*, p. 106 (n. 2); J. E. Meade and C. J. Hitch, *An Introduction to Economic Analysis and Policy*, pp. 257, 263.

22. S. H. Slichter, "The Conditions of Expansion," *American Economic Review*, vol. 32 (1942), p. 19, and "Symposium on Postwar American Economy," *American Economic Review*, vol. 34 (supplement, March 1944), p. 301.

23. E. D. Domar, "The Burden of the Debt: A Rejoinder," *American Economic Review*, vol. 35 (1945), p. 418.

24. Sir J. Stamp, *The Fundamental Principles of Taxation in the Light of Modern Developments*, p. 75.

25. G. Greer, "City Replanning and Rebuilding," *Postwar Economic Problems*, pp. 214, 215, 217ff.; A. H. Hansen, "The Postwar Economy," *Postwar Economic Problems*, p. 24; A. H. Hansen and H. S. Perloff, *State and Local Finance in the National Economy*, pp. 113, 114, 118; A. H. Hansen, "Stability and Expansion," *Financing American Prosperity*, pp. 227-235; R. A. Lester, *Providing for Unemployed Workers in the Transition*, p. 111.

26. M. S. Stewart, *The American Way: Business Freedom or Government Control?* (Public Affairs Pamphlets No. 90, 1944), p. 9.

27. P. Studenski, "The Limits to Possible Debt Burdens — Federal,



State, and Local," *American Economic Review*, vol. 27 (supplement, 1937), p. 72.

28. L. H. Brown, "Using Private Business Agencies to Achieve Public Goals in the Postwar World," *American Economic Review*, vol. 33 (supplement, 1943), p. 75; H. G. Moulton, and others, *Capital Expansion, Employment, and Economic Stability*, p. 317ff.

29. C. C. Abbott, *The Financial Situation After Two Years of War*, p. 5; H. Clay, *The Post-War Unemployment Problem*, p. 193ff.; U. S. Federal Reserve Board, "Proposal for Guarantee of Industrial Loans by Federal Reserve Banks," *Federal Reserve Bulletin* (June 1944), pp. 534-536, and "Business Finance in the War," *Federal Reserve Bulletin* (July 1944), pp. 633-644.

30. F. D. Graham, *Social Goals and Economic Institutions*, pp. 236ff., 239.

#### CHAPTER III: INCOME CREATION BY MEANS OF TAXATION

1. F. Machlup, *International Trade and the National Income Multiplier*, pp. 202, 205, 208.

2. R. Bissell, "Postwar Private Investing and Public Spending," *Postwar Economic Problems*, pp. 93-96, 98; A. H. Hansen, *Fiscal Policy and Business Cycles*, p. 249; S. S. Kuznets, *Uses of National Income in Peace and War*, Table 6; P. A. Samuelson, "Full Employment After the War," *Postwar Economic Problems*, pp. 32, 35.

3. J. M. Keynes, *The General Theory of Employment, Interest, and Money*, pp. 92-95.

4. W. H. Beveridge, *Full Employment in a Free Society*, Appendix C, pp. 346-348; V. Salera, "Taxation and Economic Stability," *Quarterly Journal of Economics*, vol. 57 (1943), p. 323n.

5. A. Marshall, *Principles of Economics*, p. 802n; F. W. Taussig, *Principles of Economics*, II, 519.

6. H. G. Brown, "The Incidence of a General Output or a General Sales Tax," *Journal of Political Economy*, vol. 47 (1939), p. 262; A. C. Pigou, *A Study in Public Finance*, p. 35.

#### CHAPTER IV: THE METHOD, THE MULTIPLIER AND THE MARGINAL EFFICIENCY OF CAPITAL

1. G. Haberler, *Prosperity and Depression*, pp. 222-232; F. Machlup, "Period Analysis and Multiplier Theory," *Quarterly Journal of Economics*, vol. 54 (1939), p. 1.

2. P. A. Samuelson, "Fiscal Policy and Income Determination," *Quarterly Journal of Economics*, vol. 56 (1942), p. 584.

3. J. A. Schumpeter, *The Theory of Economic Development*, pp. 210, 211.

4. A. P. Lerner, *The Economics of Control*, p. 339ff.

5. J. M. Keynes, *The General Theory of Employment, Interest, and Money*, p. 252.

6. A. H. Hansen, *Fiscal Policy and Business Cycles*, p. 328.
7. P. H. Douglas, *The Theory of Wages*, p. 214.
8. J. R. Hicks, *Theory of Wages*, pp. 121, 122, 124, 125.
9. E. Cannan, "The Demand for Labour," *Economic Journal*, vol. 42 (1932), p. 369; P. H. Douglas, *The Theory of Wages*, p. 152; D. McC. Wright, "Professor Knight on Limits to the Use of Capital," *Quarterly Journal of Economics*, vol. 58 (1944), p. 356.

## CHAPTER V: BROADENING THE SCOPE

1. K. E. Boulding, "The Concept of Economic Surplus," *American Economic Review*, vol. 35 (1945), p. 863ff.; P. H. Douglas, *The Theory of Wages*, pp. 421-460; C. W. Guillebaud, "Income Tax and the 'Double Taxation' of Saving," *Economic Journal*, vol. 45 (1935), p. 491; F. W. Taussig, *Principles of Economics*, II, 24, 26, 28-29, 517; H. M. Groves, *Financing Government*, p. 729; J. A. Hobson, *Taxation in the New State*, pp. 19, 84-85; A. P. Lerner, *The Economics of Control*, p. 228.
2. R. F. Harrod, "Full Employment and Security of Livelihood," *Economic Journal*, vol. 53 (1943), p. 339; J. E. Meade, and C. J. Hitch, *An Introduction to Economic Analysis and Policy*, pp. 66, 256; J. Robinson, *An Essay on Marxian Economics*, p. 77.
3. J. H. G. Pierson, "The Underwriting of Aggregate Consumer Spending as a Pillar of Full-Employment Policy," *American Economic Review*, vol. 34 (1944), p. 38.
4. A. C. Pigou, *A Study in Public Finance*, p. 300.
5. A. Marshall, *Principles of Economics*, p. 230; J. S. Mill, *Principles of Political Economy*, p. 483; D. Ricardo, *The Principles of Political Economy and Taxation*, pp. 101, 158-159; A. Smith, *The Wealth of Nations*, p. 777; F. W. Taussig, *Principles of Economics*, II, 510-11, 522.
6. A. R. Green, "Social Reconstruction by the Regulation of Incomes," *Economic Journal*, vol. 52 (1942), p. 37; A. H. Hansen, *Fiscal Policy and Business Cycles*, pp. 179-185; J. M. Keynes, *The General Theory of Employment, Interest, and Money*, pp. 372-73; A. N. McLeod, "The Financing of Employment-Maintaining Expenditures," *American Economic Review*, vol. 35 (1945), p. 643.
7. F. Benham, "What Is the Best Tax System?" *Economica*, vol. 9 (1942), pp. 118-121; I. Fisher, *Constructive Income Taxation: A Proposal for Reform*.
8. Z. C. Dickinson, "Incentive Problems in Regulated Capitalism," *American Economic Review*, vol. 34 (supplement, March 1944), p. 161; H. M. Groves, *Production, Jobs, and Taxes*, p. 69.
9. C. Clark, *National Income and Outlay*, Table 55, p. 124; P. H. Douglas, *The Theory of Wages*, p. 491; F. B. Garver and A. H. Hansen, *Principles of Economics*, pp. 553-557; J. R. Hicks, *Theory of Wages*, pp. 127-129, 131; S. S. Kuznets, *National Income and Its Composition*, p. 217.
10. W. H. Beveridge, *Full Employment in a Free Society*, p. 352; E. W. Gilboy, "Income-Expenditure Relations in the United States," *Review of*

*Economic Statistics*, vol. 22 (1940), p. 121; J. Marschak, "Personal and Collective Budget Functions," *ibid.*, vol. 21 (1939), p. 161; L. A. Metzler, "Effects of Income Redistribution," *ibid.*, vol. 25 (1943), p. 55.

11. M. J. Bowman, "A Graphical Analysis of Personal Income Distribution in the United States," *American Economic Review*, vol. 35 (1945), p. 607.

12. H. S. Ellis, "Economic Expansion through Competitive Markets," *Financing American Prosperity*, p. 173.

13. A. H. Hansen, *Fiscal Policy and Business Cycles*, pp. 408-410, and "Stability and Expansion," *Financing American Prosperity*, pp. 224-25.

14. A. Sweezy, "Secular Stagnation?" *Postwar Economic Problems*, p. 81.

15. J. M. Clark, "Financing High-Level Employment," *Financing American Prosperity*, pp. 91, 96.

#### CHAPTER VI: APPROACHING REALITY

1. L. M. Lachman, "Investment and Costs of Production," *American Economic Review*, vol. 28 (1938), p. 473.

2. G. Haberler, *Prosperity and Depression*, p. 107.

3. J. M. Clark, "Financing High-Level Employment," *Financing American Prosperity*, pp. 112, 113; H. S. Ellis, "Economic Expansion Through Competitive Markets," *ibid.*, p. 184; S. H. Slichter, "Public Policies and Postwar Employment," *ibid.*, p. 320.

4. A. P. Lerner, *The Economics of Control*, p. 288.

5. H. S. Ellis, "Economic Expansion Through Competitive Markets," *Financing American Prosperity*, pp. 189, 190.

6. A. H. Hansen, "Cost Functions and Full Employment," *American Economic Review*, vol. 37 (1947), p. 554; O. Lange, *Price Flexibility and Employment*, p. 37.

7. J. A. Schumpeter, *Capitalism, Socialism, and Democracy*, pp. 87-106.

8. E. D. Fagan and R. W. Jastram, "Tax Shifting in the Short Run," *Quarterly Journal of Economics*, vol. 53 (1939), pp. 562-589; E. D. Fagan, "Tax Shifting in the Market Period," *American Economic Review*, vol. 32 (1942), p. 72.

9. A. Smith, *The Wealth of Nations*, p. 324.

10. E. C. Bratt, *Business Cycles and Forecasting*, pp. 229, 244.

11. A. C. Pigou, *Employment and Equilibrium*, pp. 235-245; A. H. Hansen, *Fiscal Policy and Business Cycles*, p. 286.

12. P. A. Samuelson, "Interactions Between the Multiplier Analysis and the Principle of Acceleration," *Review of Economic Statistics*, vol. 21 (1939), pp. 75-78, and "A Synthesis of the Principle of Acceleration and the Multiplier," *Journal of Political Economy*, vol. 47 (1939), p. 786.

13. A. C. Pigou, *Employment and Equilibrium*, pp. 232-234.

14. G. Haberler, *Prosperity and Depression*, pp. 84, 85.

15. O. Lange, *Price Flexibility and Employment*, pp. 67-70.

16. A. C. Pigou, *The Economics of Welfare*, p. 667; D. Ricardo, *The Principles of Political Economy and Taxation*, p. 164.
17. H. C. Wallich, "Fiscal Policy and the Budget," *Economic Problems of Latin America*, p. 177.
18. For an excellent analysis of the entire subject see F. Machlup, *International Trade and the National Income Multiplier*, pp. 130-198.

## CHAPTER VII: A COMPARISON OF POLICIES

1. J. M. Clark, "Symposium on Postwar American Economy," *American Economic Review*, vol. 34 (supplement, March 1944), p. 297.
2. R. A. Lester, *Providing for Unemployed Workers in the Transition*, p. 103.
3. R. Blough, "Economic Research and Tax Policy," *American Economic Review*, vol. 34 (supplement, June 1944), pp. 1-21.
4. H. O. Meredith, "Rates and Taxes," *Economic Journal*, vol. 49 (1939), p. 409ff.
5. L. C. Robbins, *An Essay on the Nature and Significance of Economic Science*, pp. 150, 151; J. Viner, "The Short View and the Long in Economic Policy," *American Economic Review*, vol. 30 (1940), p. 2.
6. J. A. Estey, *Business Cycles*, p. 343ff.; H. H. Villard, *Deficit Spending and the National Income*, p. 342.
7. G. Haberler, *Prosperity and Depression*, p. 493; O. R. Lange, *Price Flexibility and Employment*, p. 83; C. D. Edwards, "Can the Antitrust Laws Preserve Competition?" *American Economic Review*, vol. 30 (supplement, 1940), p. 164; P. T. Homan, "In What Areas Should Anti-trust Policy Be Replaced?" *ibid.*, p. 180; D. Wallace, "Kinds of Public Control to Replace or Supplement Anti-trust Laws," *ibid.*, p. 194.
8. M. A. Copeland, "How to Achieve Full and Stable Employment," *American Economic Review*, vol. 34 (supplement, March 1944), p. 139.
9. G. Haberler, *Prosperity and Depression*, pp. 221, 242, 388-390, 391-404.
10. J. B. Canning, "Rate of Interest," *American Economic Review*, vol. 28 (supplement, 1938), pp. 73, 74; G. Colm and F. Lehmann, *Economic Consequences of Recent American Tax Policy*, p. 20ff.; J. F. Ebersole, "The Influence of Interest Rates upon Entrepreneurial Decisions," *American Economic Review*, vol. 28 (supplement, 1938), p. 75; A. H. Hansen, *Fiscal Policy and Business Cycles*, p. 331f., and "Some Notes on Terborgh's 'The Bogey of Economic Maturity,'" *Review of Economic Statistics*, vol. 28 (1946), p. 13; F. A. Hayek, "Investment That Raises the Demand for Capital," *Review of Economic Statistics*, vol. 19 (1937), p. 175; H. G. Hayes, *Spending, Saving, and Employment*, p. 195; G. R. Holden, "Mr. Keynes' Consumption Function and the Time-Preference Postulate," *Quarterly Journal of Economics*, vol. 52 (1938), pp. 281, 294; F. A. Lutz, "The Interest Rate and Investment in a Dynamic Economy," *American Economic Review*, vol. 35 (1945), p. 830; F. Machlup, "The Rate

of Interest as Cost Factor and as Capitalization Factor," *American Economic Review*, vol. 25 (1935), p. 459; P. A. Samuelson, "The Effect of Interest Rate Increases on the Banking System," *American Economic Review*, vol. 35 (1945), p. 16; G. L. S. Shackle, "A Means of Promoting Investment," *Economic Journal*, vol. 51 (1941), p. 260.

11. B. M. Anderson, "The Road Back to Full Employment," *Financing American Prosperity*, pp. 30, 31, 39; J. M. Clark, "Financing High-Level Employment," *ibid.*, pp. 123, 124.

12. T. Arnold, *The Bottlenecks of Business*; C. D. Edwards, "The Relation of Price Policy to Fluctuations of Investment," *American Economic Review*, vol. 28 (supplement 1938), p. 60; H. C. Simons, *A Positive Program for Laissez Faire*.

13. A. Bergson, "Price Flexibility and the Level of Income," *Review of Economic Statistics*, vol. 25 (1943), p. 2; H. Ellis, "Economic Expansion Through Competitive Markets," *Financing American Prosperity*, pp. 189, 190; A. H. Hansen, *Fiscal Policy and Business Cycles*, p. 313.

14. G. Haberler, *Prosperity and Depression*, p. 491ff.; H. Staehle, "Employment in Relation to Technical Progress," *Review of Economic Statistics*, vol. 22 (1940), p. 98; A. G. B. Fisher, *Economic Progress and Social Security*, p. 102ff.

15. B. M. Anderson, "The Road Back to Full Employment," *Financing American Prosperity*, p. 52; H. S. Ellis, "Economic Expansion Through Competitive Markets," *ibid.*, p. 139; F. D. Graham, *Social Goals and Economic Institutions*, pp. 152, 158-160; D. T. Smith, *Deficits and Depressions*, p. 226ff.; D. McC. Wright, *The Creation of Purchasing Power*, p. 134.

16. For example: E. C. Bratt, *Business Cycles and Forecasting*, p. 210, also footnote; J. A. Estey, *Business Cycles*, pp. 307, 308, 440-442; G. Haberler, *Prosperity and Depression*, pp. 222-231; R. G. Thomas, *Our Modern Banking and Monetary System*, p. 518ff.

17. C. Clark, "Public Finance and Changes in the Value of Money," *Economic Journal*, vol. 55 (1945), p. 376; S. H. Slichter, "Public Policies and Postwar Employment," *Financing American Prosperity*, p. 314.

18. W. H. Beveridge, *Full Employment in a Free Society*, pp. 148, 149.

19. D. McC. Wright, *The Creation of Purchasing Power*, p. 138; S. H. Slichter, "Public Policies and Postwar Employment," *Financing American Prosperity*, p. 314; H. G. Moulton, *The New Philosophy of Public Debt*, p. 74.

20. S. E. Harris, "Postwar Public Debt," *Postwar Economic Problems*, pp. 175, 181, 184; B. U. Ratchford, "The Burden of a Domestic Debt," *American Economic Review*, vol. 32 (1942), p. 466; D. T. Smith, *Deficits and Depressions*, pp. 227-229; D. McC. Wright, "The Economic Limit and Economic Burden of an Internally Held National Debt," *Quarterly Journal of Economics*, vol. 55 (1940), p. 129.

21. B. M. Anderson, "The Road Back to Full Employment," *Financing*

*American Prosperity*, pp. 28, 52; A. H. Hansen, "Stability and Expansion," *ibid.*, p. 217; D. T. Smith, *Deficits and Depressions*, p. 227.

22. G. Haberler, *Prosperity and Depression*, p. 126.

23. Compare the following: F. D. Graham, *Social Goals and Economic Institutions*, p. 161, also p. 163, note 16; A. H. Hansen and H. S. Perloff, *State and Local Finance in the National Economy*, p. 287; F. Machlup, "Summary and Analysis," *Financing American Prosperity*, p. 446; H. H. Villard, *Deficit Spending and the National Income*, p. 345; J. H. Williams, "Deficit Spending," *American Economic Review*, vol. 31 (supplement, 1941), p. 65.

## CHAPTER VIII: AN OVER-ALL POLICY

1. E. C. Bratt, *Business Cycles and Forecasting*, p. 714ff.; W. C. Mitchell, *Business Cycles*, p. 189 to end.

2. J. A. Schumpeter, *The Theory of Economic Development*, p. 57.

3. J. M. Clark, "Symposium on Postwar American Economy," *American Economic Review*, vol. 34 (supplement, March 1944), p. 296; A. G. B. Fisher, *Economic Progress and Social Security*, p. 105, and chaps. V, VI; F. Machlup, "Summary and Analysis," *Financing American Prosperity*, pp. 394-404.

4. S. E. Harris, *Economics of Social Security*, pp. 53-55, 359.

5. B. M. Anderson, "The Road Back to Full Employment," *Financing American Prosperity*, pp. 30-44.

6. H. S. Ellis, "Economic Expansion through Competitive Markets," *Financing American Prosperity*, pp. 126-132; A. G. B. Fisher, *Economic Progress and Social Security*, pp. 144, 145, 161; L. H. Kimmel, *Postwar Tax Policy and Business Expansion*, p. 8.

7. D. T. Smith, *Deficits and Depressions*, p. 237.

8. A. H. Hansen and H. S. Perloff, *State and Local Finance in the National Economy*, p. 245.

9. W. H. Beveridge, *Full Employment in a Free Society*, p. 337; A. H. Hansen, "Three Methods of Expansion Through Fiscal Policy," *American Economic Review*, vol. 35 (1945), p. 382.

10. A. G. Buehler, "Public Expenditures and the Incidence of Taxes: Some Theoretical Considerations," *American Economic Review*, vol. 28 (1938), p. 679; G. O. May, "The Consequences of Increasing Taxes," *Proceedings of the Academy of Political Science*, vol. 17 (1938), p. 487.

11. J. M. Keynes, *The General Theory of Employment, Interest, and Money*, p. 325.

12. N. W. Chamberlain, "Professor Hansen's Fiscal Policy and the Debt," *American Economic Review*, vol. 35 (1945), p. 400; A. H. Hansen, "A Note on Fiscal Policy: A Clarification," *American Economic Review*, vol. 35 (1945), p. 408.

13. A. D. Gayer, *Monetary Policy and Economic Stabilization*, p. 246; J. M. Keynes, *The General Theory of Employment, Interest, and Money*, p. 271; J. P. Wernette, *Financing Full Employment*, pp. 32, 91.

14. C. Warburton, "Monetary Theory, Full Production and the Great Depression," *Econometrica*, vol. 13 (1945), p. 117; J. P. Wernette, *Financing Full Employment*, chap. III, p. 33ff.

15. W. T. Foster and Waddill Catchings, *Money*, p. 97ff.; B. Graham, *Storage and Stability*, and *World Commodities and World Currency*; F. D. Graham, "The Primary Functions of Money and Their Consummation in Monetary Policy," *American Economic Review*, vol. 30 (supplement, 1940), pp. 1-16; R. F. Harrod, *Towards a Dynamic Economics*, pp. 122-128.

16. I. Fisher, *100 Per Cent Money*.

17. E. D. Domar, "The Problem of Capital Accumulation," *American Economic Review*, vol. 38 (1948), pp. 777-782; R. F. Harrod, *Towards a Dynamic Economics*, pp. 63-100.

18. C. Clark, *National Income and Outlay*, pp. 139-141, 208, 232; R. S. Williams, Jr., "Fiscal Policy and the Propensity to Consume," *Economic Journal*, vol. 55 (1945), pp. 390-397.

19. C. Clark, "Public Finance and Changes in the Value of Money," *Economic Journal*, vol. 55 (1945), p. 376; S. S. Kuznets, "National Income and Taxable Capacity," *American Economic Review*, vol. 32 (supplement, March 1942), p. 37.

20. A. N. McLeod, "The Financing of Employment-Maintaining Expenditures," *American Economic Review*, vol. 35 (1945), p. 640ff.

21. C. Clark, *National Income and Outlay*, p. 272.

22. W. L. Crum, "Postwar Federal Expenditures and Their Implications for Tax Policy," *American Economic Review*, vol. 35 (supplement, 1945), pp. 335, 336.

#### CHAPTER IX: CERTAIN MAXIMS OF PUBLIC FINANCE

1. Committee on Postwar Tax Policy, *A Tax Program for a Solvent America*, p. 19.

2. G. Haberler, "Multiplier Effects of a Balanced Budget: Some Monetary Implications of Mr. Haavelmo's Paper," *Econometrica*, vol. 14 (1946), p. 148; R. M. Goodwin, "Multiplier Effects of a Balanced Budget: The Implication of a Lag for Mr. Haavelmo's Analysis," *ibid.*, p. 150; E. E. Hagen, "Multiplier Effects of a Balanced Budget: Further Analysis," *ibid.*, p. 152; T. Haavelmo, "Multiplier Effects of a Balanced Budget: Reply," *ibid.*, p. 156.

3. H. M. Groves, *Postwar Taxation and Economic Progress*, chaps. II-XII.

4. R. Bauder, "The Probable Incidence of Social Security Taxes," *American Economic Review*, vol. 26 (1936), p. 464; E. Depres, "The Workability of Compensatory Devices," *American Economic Review*, vol. 29 (supplement, 1939), p. 226; H. M. Groves, *Production, Jobs, and Taxes*, p. 95; J. K. Hall, "Incidence of Federal Social Security Pay Roll Taxes," *Quarterly Journal of Economics*, vol. 53 (1938), p. 38; C. E.

Lindblom, "Long-Run Considerations in Employment Stabilization and Unemployment Compensation," *ibid.*, vol. 56 (1941), p. 145; C. E. Lindblom, "Pay Roll Taxation and Employment Stabilization," *ibid.*, vol. 57 (1943), p. 657n.; K. Pribram, "Employment Stabilization Through Pay Roll Taxation," *ibid.*, vol. 57 (1942), p. 142; J. A. Schumpeter, *Capitalism, Socialism, and Democracy*, p. 64; H. F. Underhill, "The Incidence of Pay Roll Taxes," *Quarterly Journal of Economics*, vol. 57 (1942), p. 160.

5. S. E. Harris, *Economics of Social Security*, p. 266ff.

6. H. M. Groves, *Postwar Taxation and Economic Progress*, pp. 360-61; G. O. May, "The Consequences of Increasing Taxes," *Proceedings of the Academy of Political Science*, vol. 17 (1938), p. 487.

7. H. M. Groves, *Financing Government* (1946), pp. 36-41; C. L. King, *Public Finance*, p. 203; W. J. Shultz, *American Public Finance and Taxation*, pp. 68, 340.

8. G. W. Edwards, *Principles of Banking and Finance*, p. 492; H. M. Groves, *Financing Government* (1939), p. 673; C. L. King, *Public Finance*, pp. 553, 568; W. J. Shultz, *American Public Finance and Taxation*, pp. 62, 169.

9. D. B. Copland, *The Road to High Employment*, p. 33; A. H. Hansen, *America's Role in the World Economy*, p. 78; C. L. King, *Public Finance*, p. 551; A. C. Pigou, *A Study in Public Finance*, p. 287.

10. E. G. Daniel, *Financing the Defense Program*, pp. 18, 23, 26-28, *Federal Finance, Prices and Public Welfare*, pp. 39-40, 42, and *Price Control*, p. 17; A. H. Hansen, *Fiscal Policy and Business Cycles*, p. 435; A. G. Hart, E. D. Allen and others, *Paying for Defense*, pp. 142, 143; W. J. Shultz, *American Public Finance and Taxation*, pp. 172, 173; P. M. Titus, "Can We Stop Inflation?" *Bulletin of the National Tax Association*, vol. 29 (1944), p. 207.

11. H. M. Groves, *Financing Government* (1939), pp. 684, 685.

12. H. M. Groves, *Financing Government* (1946), pp. 557-560.

13. E. D. Domar, "Public Debt and National Income," *Public Finance and Full Employment*, pp. 54, 56; H. C. Wallich, "Public Debt and Income Flow," *Public Finance and Full Employment*, pp. 84-93.

14. R. A. Musgrave, "Fiscal Policy, Stability, and Full Employment," *Public Finance and Full Employment*, p. 12.

15. E. W. Swanson and E. P. Schmidt, *Economic Stagnation or Progress*, pp. 131-138; Committee for Economic Development, *Jobs and Markets*, pp. 90, 95, 96, 98, 99; R. I. Robinson, "Public Debt and Income Flow," *Public Finance and Full Employment*, pp. 85-93.

16. H. M. Groves, *Financing Government* (1939), p. 738, and *Postwar Taxation and Economic Progress*, p. 357.

17. Committee for Economic Development, *Jobs and Markets*, p. 63ff.; E. D. Domar, "Public Debt and National Income," *Public Finance and Full Employment*, p. 57; H. M. Groves, *Postwar Taxation and Economic*



*Progress*, p. 358; A. H. Hansen, "A Note on Fiscal Policy: A Clarification," *American Economic Review*, vol. 35 (1945), p. 408; D. B. Copeland, *The Road to High Employment*, pp. 121, 122n., 10-12.

18. A. H. Hansen, *Fiscal Policy and Business Cycles*, p. 136.

19. N. W. Chamberlain, "Professor Hansen's Fiscal Policy and the Debt," *American Economic Review*, vol. 35 (1945), p. 400.

20. T. Balogh, "The Burden of the National Debt: A Comment," *Economic Journal*, vol. 55 (1945), pp. 461-463; E. D. Domar, "The 'Burden of the Debt' and the National Income," *American Economic Review*, vol. 34 (1944), p. 798; L. A. Hahn, "Compensating Reactions to Compensatory Spending," *American Economic Review*, vol. 35 (1945), p. 34; B. F. Haley, "The Federal Budget: Economic Consequences of Deficit Financing," *American Economic Review*, vol. 31 (supplement, 1941), p. 73; A. H. Hansen, "Stability and Expansion," *Financing American Prosperity*, p. 238; S. E. Leland, "Management of the Public Debt After the War," *American Economic Review*, vol. 34 (supplement, June 1944), p. 89; H. G. Moulton and others, *Capital Expansion, Employment, and Economic Stability*, p. 326; S. H. Slichter, "Public Policies and Postwar Employment," *Financing American Prosperity*, p. 312.

21. C. J. Anderson, "Compensatory Theory of Public Works Expenditure," *Journal of Political Economy*, vol. 53 (1945), p. 258ff.; J. M. Clark, *Demobilization of Wartime Economic Controls*, p. 180, and "Financing High-Level Employment," *Financing American Prosperity*, pp. 89, 90, 94, 105, 106; H. S. Ellis, "Economic Expansion Through Competitive Markets," *Financing American Prosperity*, p. 134; A. D. Gayer, "Fiscal Policies," *American Economic Review*, vol. 28 (supplement, 1938), pp. 90, 91; S. H. Slichter, "Public Policies and Postwar Employment," *Financing American Prosperity*, p. 312.

22. J. E. Meade and C. J. Hitch, *An Introduction to Economic Analysis and Policy*, p. 62; J. H. G. Pierson, "The Underwriting of Aggregate Consumer Spending as a Pillar of Full-Employment Policy," *American Economic Review*, vol. 34 (1944), p. 38; K. E. Poole, "Tax Remission as a Means of Influencing Cyclical Fluctuations," *Quarterly Journal of Economics*, vol. 53 (1939), p. 261.

23. G. Haberler, "Multiplier Effects of a Balanced Budget: Some Monetary Implications of Mr. Haavelmo's Paper," *Econometrica*, vol. 14 (1946), p. 149; see also Mr. Haavelmo's article in the same issue, p. 158; G. Haberler, "Some Observations on the Murray Full Employment Bill," *Review of Economic Statistics*, vol. 27 (1945), p. 108; R. A. Musgrave, "Fiscal Policy, Stability, and Full Employment," *Public Finance and Full Employment*, p. 12.

## BIBLIOGRAPHY

- Abbott, Charles Cortez. *The Financial Situation of Industry After Two Years of War*. Division of Research; Graduate School of Business Administration, Harvard University, 1944.
- Anderson, Benjamin M. "The Road Back to Full Employment," *Financing American Prosperity*. New York: Twentieth Century Fund, 1945.
- Anderson, Clay J. "Compensatory Theory of Public Works Expenditure," *Journal of Political Economy*, vol. 53 (1945).
- Arnold, Thurman. *The Bottlenecks of Business*. New York: Reynal and Hitchcock, 1940.
- Balogh, T. "The Burden of the National Debt. A Comment," *Economic Journal*, vol. 55 (1945).
- Bauder, Russell. "The Probable Incidence of Social Security Taxes." *American Economic Review*, vol. 26 (1936).
- Benham, Frederick. "What Is the Best Tax System?" *Economica*, vol. 9 (1942).
- Bergson, Abram. "Price Flexibility and the Level of Income," *Review of Economic Statistics*, vol. 25 (1943).
- Beveridge, William H. *Full Employment in a Free Society*. New York: Norton, 1945.
- Bissell, Richard. "Postwar Private Investing and Public Spending," *Postwar Economic Problems*. New York and London: McGraw-Hill, 1943.
- Blough, Roy. "Economic Research and Tax Policy," *American Economic Review*, vol. 34 (supplement, June 1944).
- Boulding, Kenneth E. "The Concept of Economic Surplus," *American Economic Review*, vol. 35 (1945).
- Bowman, Mary Jean. "A Graphical Analysis of Personal Income Distribution in the United States," *American Economic Review*, vol. 35 (1945).
- Bradley, Philip D. "Direct Effects of a Corporate Income Tax," *Quarterly Journal of Economics*, vol. 56 (1942).
- Bratt, Elmer C. *Business Cycles and Forecasting*, rev. ed. Chicago: Business Publications, Inc., 1940.
- Brown, Harry G. "The Incidence of a General Output or a General Sales Tax," *Journal of Political Economy*, vol. 47 (1939).

- Brown, Lewis H. "Using Private Business Agencies to Achieve Public Goals in the Postwar World," *American Economic Review*, vol. 33 (supplement, 1943).
- Buehler, Alfred G. "Public Expenditures and the Incidence of Taxes: Some Theoretical Considerations," *American Economic Review*, vol. 28 (1938).
- Burgess, W. Randolph. *The Reserve Banks and the Money Market*. New York: Harper, 1927.
- *The Reserve Banks and the Money Market*, rev. ed. New York: Harper, 1946.
- Butters, J. Keith and John Lintner. *Effect of Federal Taxes on Growing Enterprises*. Boston: Division of Research, Harvard Graduate School of Business Administration, 1945.
- Cannan, Edwin. "The Demand for Labour," *Economic Journal*, vol. 42 (1932).
- Canning, John B. "Rate of Interest," *American Economic Review*, vol. 28 (supplement, 1938).
- Chamberlain, Neil W. "Professor Hansen's Fiscal Policy and the Debt," *American Economic Review*, vol. 35 (1945).
- Clark, Colin. *National Income and Outlay*. London: Macmillan, Ltd., 1937.
- "Public Finance and Changes in the Value of Money," *Economic Journal*, vol. 55 (1945).
- Clark, John M. *Demobilization of Wartime Economic Controls*. New York and London: McGraw-Hill, 1944.
- "Financing High-Level Employment," *Financing American Prosperity*. New York: Twentieth Century Fund, 1945.
- "Symposium on Postwar American Economy," *American Economic Review*, vol. 34 (supplement, March 1944).
- Clay, Henry. *The Post-War Unemployment Problem*. London: Macmillan, 1930.
- Colm, Gerhard and Fritz Lehmann. *Economic Consequences of Recent American Tax Policy*. The Graduate Faculty of Political and Social Science, New School for Social Research, New York, 1938.
- Committee for Economic Development. *Jobs and Markets*. New York: McGraw-Hill, 1946.
- Committee on Postwar Tax Policy. *A Tax Program for a Solvent America*. New York, Ronald Press, 1945.
- Copeland, Morris A. "How to Achieve Full and Stable Employment," *American Economic Review*, vol. 34 (supplement, March 1944).

- Copland, Douglas Berry. *The Road to High Employment*. Cambridge: Harvard University Press, 1945.
- Crum, W. L. "On the Alleged Double Taxation of Savings," *American Economic Review*, vol. 29 (1939).
- "Postwar Federal Expenditures and Their Implications for Tax Policy," *American Economic Review*, vol. 35 (supplement, May 1945).
- Daniel, Edward G. *Federal Finance, Prices and Public Welfare*. Bureau of Business Research, University of Oregon, 1944.
- *Financing the Defense Program*. Bureau of Business Research, University of Oregon, 1941.
- *Price Control*. Bureau of Business Research, University of Oregon, 1942.
- Depres, Emile. "The Workability of Compensatory Devices," *American Economic Review*, vol. 29 (supplement, 1939).
- Dickinson, Z. Clark. "Incentive Problems in Regulated Capitalism," *American Economic Review*, vol. 34 (supplement, March 1944).
- Domar, Evsey D. "The 'Burden of the Debt' and the National Income," *American Economic Review*, vol. 34 (1944).
- "The Burden of the Debt: A Rejoinder," *American Economic Review*, vol. 35 (1945).
- "The Problem of Capital Accumulation," *American Economic Review*, vol. 38 (1948).
- "Public Debt and National Income," *Public Finance and Full Employment*. Washington, D. C.: Board of Governors of the Federal Reserve System, 1945.
- Domar, Evsey D. and Richard A. Musgrave. "Proportional Income Taxation and Risk-taking," *Quarterly Journal of Economics*, vol. 58 (1944).
- Douglas, Paul Howard. *The Theory of Wages*. New York: Macmillan, 1934.
- Ebersole, J. Franklin. "The Influence of Interest Rates upon Entrepreneurial Decisions," *American Economic Review*, vol. 28 (supplement, 1938).
- Edwards, Corwin D. "Can the Antitrust Laws Preserve Competition?" *American Economic Review*, vol. 30 (supplement, 1940).
- "The Relation of Price Policy to Fluctuations of Investment," *American Economic Review*, vol. 28 (supplement, 1938).
- Edwards, George W. *Principles of Banking and Finance*. New York: Ronald Press, 1932.
- Ellis, H. S. "Economic Expansion through Competitive Markets,"

- Financing American Prosperity*. New York: Twentieth Century Fund, 1945.
- Ellis, Paul W. "Note on 'Taxes and the Consumer' — a Gestalt Analysis," *American Economic Review*, vol. 29 (1939).
- Estey, James Arthur. *Business Cycles*. New York: Prentice-Hall, 1941.
- Fagan, Elmer D. "Tax Shifting in the Market Period," *American Economic Review*, vol. 32 (1942).
- Fagan, Elmer D. and R. W. Jastram. "Tax Shifting in the Short Run," *Quarterly Journal of Economics*, vol. 53 (1939).
- Fisher, A. G. B. *Economic Progress and Social Security*. London: Macmillan, 1945.
- Fisher, Irving. *Constructive Income Taxation: A Proposal for Reform*. New York and London: Harper, 1942.
- "The Double Taxation of Savings," *American Economic Review*, vol. 29 (1939).
- *100 Per Cent Money*. New York: Adelphi, 1935.
- Foster, William Trufant and Waddill Catchings. *Money*. Boston: Houghton Mifflin, 1923.
- Garver, Frederic Benjamin and Alvin Harvey Hansen. *Principles of Economics*, rev. ed. Boston: Ginn, 1937.
- Garver, Raymond. "The Effect of Taxation on a Monopolist," *American Economic Review*, vol. 22 (1932).
- Gayer, Arthur D. "Fiscal Policies," *American Economic Review*, vol. 28 (supplement, 1938).
- *Monetary Policy and Economic Stabilization*. New York and London: Macmillan, 1935.
- George, Henry. *Progress and Poverty*, 50th anniversary ed. New York: Robert Schalkenbach Foundation, 1929.
- Gilbert, Donald W. "The Incidence of Sales Taxes: Rejoinder," *Quarterly Journal of Economics*, vol. 54 (1940).
- "The Shifting of Sales Taxes," *Quarterly Journal of Economics*, vol. 53 (1939).
- Gilboy, Elizabeth W. "Income-Expenditure Relations in the United States," *Review of Economic Statistics*, vol. 22 (1940).
- Goode, Richard. "The Corporate Income Tax and the Price Level," *American Economic Review*, vol. 35 (1945).
- Goodwin, R. M. "Multiplier Effects of a Balanced Budget: The Implications of a Lag for Mr. Haavelmo's Analysis," *Econometrica*, vol. 14 (1946).
- Graham, Benjamin. *Storage and Stability*. New York: McGraw-Hill, 1937.

- *World Commodities and World Currency*, 1st ed. New York and London: McGraw-Hill, 1944.
- Graham, Frank D. "The Primary Functions of Money and Their Consumption in Monetary Policy," *American Economic Review*, vol. 30 (supplement, 1940).
- *Social Goals and Economic Institutions*. Princeton, N. J.: Princeton University Press, 1942.
- Green, A. Romney. "Social Reconstruction by the Regulation of Incomes," *Economic Journal*, vol. 52 (1942).
- Greer, Guy. "City Replanning and Rebuilding," *Postwar Economic Problems*. New York and London: McGraw-Hill, 1943.
- Groves, Harold M. *Financing Government*. New York: Holt, 1939.
- *Financing Government*, rev. ed. New York: Holt, 1946.
- "Personal Versus Corporate Income Taxes," *American Economic Review*, vol. 36 (supplement, 1946).
- *Postwar Taxation and Economic Progress*. New York and London: McGraw-Hill, 1946.
- *Production, Jobs, and Taxes*. New York: McGraw-Hill, 1944.
- "Revising the Postwar Federal Tax System," *American Economic Review*, vol. 34 (supplement, 1944).
- Guillebaud, C. W. "Income Tax and the 'Double Taxation' of Saving," *Economic Journal*, vol. 45 (1935).
- Haavelmo, Trygve. "Multiplier Effects of a Balanced Budget: Reply," *Econometrica*, vol. 14 (1946).
- Haberler, Gottfried von. "Multiplier Effects of a Balanced Budget: Some Monetary Implications of Mr. Haavelmo's Paper," *Econometrica*, vol. 14 (1946).
- *Prosperity and Depression*, 3rd ed. Geneva: League of Nations, 1941.
- "Some Observations on the Murray Full Employment Bill," *Review of Economic Statistics*, vol. 27 (1945).
- Hagen, Everett E. "Multiplier Effects of a Balanced Budget: Further Analysis," *Econometrica*, vol. 14 (1946).
- Hahn, L. Albert. "Compensating Reactions to Compensatory Spending," *American Economic Review*, vol. 35 (1945).
- Haley, B. F. "The Federal Budget: Economic Consequences of Deficit Financing," *American Economic Review*, vol. 31 (supplement, 1941).
- Hall, Bolton. "'Land' and Taxes on Monopolists," *American Economic Review*, vol. 22 (1932).

- Hall, James K. "Excise Tax Incidence and the Postwar Economy," *American Economic Review*, vol. 32 (supplement, March 1942).
- "Incidence of Federal Social Security Pay Roll Taxes," *Quarterly Journal of Economics*, vol. 53 (1938).
- Hansen, Alvin Harvey. *America's Role in the World Economy*. New York: Norton, 1945.
- "Cost Functions and Full Employment," *American Economic Review*, vol. 37 (1947).
- *Fiscal Policy and Business Cycles*. New York: Norton, 1941.
- "A Note on Fiscal Policy: A Clarification," *American Economic Review*, vol. 35 (1945).
- "The Postwar Economy," *Postwar Economic Problems*. New York and London: McGraw-Hill, 1943.
- "Some Notes on Terborgh's 'The Bogey of Economic Maturity,'" *Review of Economic Statistics*, vol. 28 (1946).
- "Stability and Expansion," *Financing American Prosperity*. New York: Twentieth Century Fund, 1945.
- "Three Methods of Expansion Through Fiscal Policy," *American Economic Review*, vol. 35 (1945).
- Hansen, Alvin H. and Harvey S. Perloff. *State and Local Finance in the National Economy*. New York: Norton, 1944.
- Hardy, Charles O. "Fiscal Policy and the National Income: a Review," *American Economic Review*, vol. 32 (1942).
- Harris, Seymour E. *Economics of Social Security*. New York and London: McGraw-Hill, 1941.
- "Postwar Public Debt," *Postwar Economic Problems*, 1st ed. New York and London: McGraw-Hill, 1943.
- Harrod, R. F. "Full Employment and Security of Livelihood," *Economic Journal*, vol. 53 (1943).
- *Towards a Dynamic Economics*. London: Macmillan, 1948.
- Hart, Albert G. "'Model-Building' and Fiscal Policy," *American Economic Review*, vol. 35 (1945).
- Hart, Albert G., Edward D. Allen, and others. *Paying for Defense*. Philadelphia: Blakiston, 1941.
- Hayek, Friedrich A. von. "Investment That Raises the Demand for Capital," *Review of Economic Statistics*, vol. 19 (1937).
- Hayes, Harry G. *Spending, Saving, and Employment*. New York: A. A. Knopf, 1945.
- Hicks, John R. *Theory of Wages*. London: Macmillan, 1935.
- Hobson, John A. *Taxation in the New State*. New York: Harcourt, Brace and Howe, 1920.

- Holden, Grenville. "Incidence of Taxation as an Analytical Concept," *American Economic Review*, vol. 30 (1940).
- "Mr. Keynes' Consumption Function and the Time-Preference Postulate," *Quarterly Journal of Economics*, vol. 52 (1938).
- Homan, Paul T. "In What Areas Should Antitrust Policy Be Replaced?" *American Economic Review*, vol. 30 (supplement 1940).
- Jastram, R. W. "The Shifting of Sales Taxes," *Quarterly Journal of Economics*, vol. 54 (1940).
- Kahn, R. F. "The Relation of Home Investment to Unemployment," *Economic Journal*, vol. 41 (1931).
- Keynes, John M. *The General Theory of Employment, Interest, and Money*. New York: Harcourt Brace, 1936.
- Kimmel, Lewis H. *Postwar Tax Policy and Business Expansion*. Washington, D. C.: Brookings Institution, 1943.
- King, Clyde L. *Public Finance*. New York: Macmillan, 1935.
- Kuznets, Simon S. *National Income and Its Composition, 1919-1938*. New York: National Bureau of Economic Research, 1941.
- "National Income and Taxable Capacity," *American Economic Review*, vol. 32 (supplement, March 1942).
- *Uses of National Income in Peace and War*, Occasional Paper No. 6. New York: National Bureau of Economic Research, 1942.
- Lachmann, L. M. "Investment and Costs of Production," *American Economic Review*, vol. 28 (1938).
- Lange, Oscar. *Price Flexibility and Employment*. Bloomington, Indiana: Principia Press, 1944.
- Leavitt, J. A. "Note on 'Taxes and the Consumer,'" *American Economic Review*, vol. 28 (1938).
- Leland, S. E. "Management of the Public Debt After the War," *American Economic Review*, vol. 34 (supplement, June 1944).
- Lerner, Abba P. "Discussion of Carl Shoup's 'Postwar Federal Interest Charge,'" *American Economic Review*, vol. 34 (supplement, June 1944).
- *The Economics of Control*. New York: Macmillan, 1944.
- Lester, Richard A. *Providing for Unemployed Workers in the Transition*. New York: McGraw-Hill, 1945.
- Lindblom, Charles E. "Long-Run Considerations in Employment Stabilization and Unemployment Compensation," *Quarterly Journal of Economics*, vol. 56 (1941).



- "Pay Roll Taxation and Employment Stabilization," *Quarterly Journal of Economics*, vol. 57 (1943).
- Lutz, Friedrich A. "The Interest Rate and Investment in a Dynamic Economy," *American Economic Review*, vol. 35 (1945).
- Lutz, Harley L. *Guideposts to a Free Economy*. New York: McGraw-Hill, 1945.
- Machlup, Fritz. "The Division of Labor Between Government and Private Enterprise," *American Economic Review*, vol. 33 (supplement, 1943).
- *International Trade and the National Income Multiplier*. Philadelphia: Blakiston, 1943.
- "Period Analysis and Multiplier Theory," *Quarterly Journal of Economics*, vol. 54 (1939).
- "The Rate of Interest as Cost Factor and as Capitalization Factor," *American Economic Review*, vol. 25 (1935).
- "Summary and Analysis," *Financing American Prosperity*. New York: Twentieth Century Fund, 1945.
- Malthus, T. R. *Principles of Political Economy*. London: William Pickering, 1836. Reprinted by University of London, 1936.
- Marschak, J. "Personal and Collective Budget Functions," *Review of Economic Statistics*, vol. 21 (1939).
- Marshall, Alfred. *Principles of Economics*, 8th ed. London: Macmillan, 1927.
- May, George O. "The Consequences of Increasing Taxes," *Proceedings of the Academy of Political Science*, New York, vol. 17 (1938).
- McLeod, Alex N. "The Financing of Employment-Maintaining Expenditures," *American Economic Review*, vol. 35 (1945).
- Meade, James E. and C. J. Hitch. *An Introduction to Economic Analysis and Policy*. New York: Oxford University Press, 1940.
- Meredith, H. O. "Rates and Taxes," *Economic Journal*, vol. 49 (1939).
- Metzler, Lloyd A. "Effects of Income Redistribution," *Review of Economic Statistics*, vol. 25 (1943).
- Mill, John Stuart. *Principles of Political Economy*. London: Longmans, Green and Co., 1929.
- Mitchell, Wesley C. *Business Cycles*. New York: National Bureau of Economic Research, 1928.
- Moulton, Harold G. and others. *Capital Expansion, Employment, and Economic Stability*. Washington, D. C.: Brookings Institution, 1940.

- *The New Philosophy of Public Debt*. Washington, D. C.: Brookings Institution, 1943.
- Musgrave, Richard A. "A Further Note on the Double Taxation of Savings," *American Economic Review*, vol. 29 (1939).
- "Fiscal Policy, Stability, and Full Employment," *Public Finance and Full Employment*. Washington, D. C.: Board of Governors of the Federal Reserve System, 1945.
- Oakes, E. E. "The Incidence of the General Income Tax," *American Economic Review*, vol. 32 (supplement, March 1942).
- Pierson, J. H. G. "The Underwriting of Aggregate Consumer Spending as a Pillar of Full-Employment Policy," *American Economic Review*, vol. 34 (1944).
- Pigou, Arthur C. *The Economics of Welfare*, 4th ed. London: Macmillan, 1932.
- *Employment and Equilibrium*. London: Macmillan, 1941.
- *Industrial Fluctuations*, 2nd ed. London: Macmillan, 1929.
- *Socialism Versus Capitalism*. London: Macmillan, 1939.
- *A Study in Public Finance*. London: Macmillan, 1928.
- Poole, K. E. "Tax Remission as a Means of Influencing Cyclical Fluctuations," *Quarterly Journal of Economics*, vol. 53 (1939).
- Pribram, Karl. "Employment Stabilization Through Pay Roll Taxation," *Quarterly Journal of Economics*, vol. 57 (1942).
- Ratchford, B. U. "The Burden of a Domestic Debt," *American Economic Review*, vol. 32 (1942).
- "Mr. Domar's 'Burden of the Debt,'" *American Economic Review*, vol. 35 (1945).
- Ricardo, David. *The Principles of Political Economy and Taxation*. London: J. M. Dent, 1929.
- Robbins, Lionel C. *An Essay on the Nature and Significance of Economic Science*, 2nd ed. rev. and extended. London: Macmillan, 1935.
- Roberts, R. O. "Thomas Chalmers on the Public Debt," *Economica*, vol. 12 (1945).
- Robinson, Joan. *An Essay on Marxian Economics*. London: Macmillan, 1942.
- Robinson, Roland I. "Public Debt and Income Flow," *Public Finance and Full Employment*. Washington, D. C.: Board of Governors of the Federal Reserve System, 1945.
- Salera, Virgil. "Taxation and Economic Stability," *Quarterly Journal of Economics*, vol. 57 (1943).

- Samuelson, Paul A. "Fiscal Policy and Income Determination," *Quarterly Journal of Economics*, vol. 56 (1942).
- "Full Employment After the War," *Postwar Economic Problems*. New York: McGraw-Hill, 1943.
- "The Effect of Interest Rate Increases on the Banking System," *American Economic Review*, vol. 35 (1945).
- "Interactions Between the Multiplier Analysis and the Principle of Acceleration," *Review of Economic Statistics*, vol. 21 (1939).
- "The Simple Mathematics of Income Determination," *Income, Employment and Public Policy: Essays in Honor of Alvin H. Hansen*. New York: W. W. Norton, 1948.
- "A Synthesis of the Principle of Acceleration and the Multiplier," *Journal of Political Economy*, vol. 47 (1939).
- Schumpeter, Joseph A. *Business Cycles*. New York: McGraw-Hill, 1939.
- *Capitalism, Socialism, and Democracy*. New York: Harper, 1942.
- *The Theory of Economic Development*. Cambridge, Mass.: Harvard University Press, 1934.
- Shackle, G. L. S. "A Means of Promoting Investment," *Economic Journal*, vol. 51 (1941).
- Shultz, William J. *American Public Finance and Taxation*. New York: Prentice-Hall, 1932.
- Simon, Herbert A. "The Incidence of a Tax on Urban Real Property," *Quarterly Journal of Economics*, vol. 57 (1943).
- Simons, Henry C. *A Positive Program for Laissez Faire* (pamphlet). Chicago: University of Chicago Press, 1934.
- Simpson, Herbert D. "The Changing Theory of Property Taxation," *American Economic Review*, vol. 29 (1939).
- Slichter, Sumner H. "The Conditions of Expansion," *American Economic Review*, vol. 32 (1942).
- "Public Policies and Postwar Employment," *Financing American Prosperity*. New York: Twentieth Century Fund, 1945.
- "Symposium on Postwar American Economy," *American Economic Review*, vol. 34 (supplement, March 1944).
- Smith, Adam. *The Wealth of Nations*. New York: Modern Library, 1937.
- Smith, Dan Throop. *Deficits and Depressions*. New York: John Wiley & Sons. London: Chapman & Hall, 1936.
- Snively, Tipton R. "The Colwyn Committee and the Incidence of Income Tax," *Quarterly Journal of Economics*, vol. 42 (1928).

- Somers, H. M. "Note on 'Taxes and the Consumer,'" *American Economic Review*, vol. 28 (1938).
- Staehle, Hans. "Employment in Relation to Technical Progress," *Review of Economic Statistics*, vol. 22 (1940).
- Stamp, Sir Josiah C. *The Fundamental Principles of Taxation in the Light of Modern Developments*. London: Macmillan, 1921.
- Stettner, Walter. "Sir James Steuart on the Public Debt," *Quarterly Journal of Economics*, vol. 59 (1945).
- Stewart, Maxwell S. *The American Way: Business Freedom or Government Control?* (Public Affairs Pamphlets, no. 90). New York: Public Affairs Committee, 1944.
- Studenski, Paul. "The Limits to Possible Debt Burdens — Federal, State and Local," *American Economic Review*, vol. 27 (supplement, 1937).
- Swanson, E. W. and E. P. Schmidt. *Economic Stagnation or Progress*. New York and London: McGraw-Hill, 1946.
- Sweezy, Allan. "Secular Stagnation?" *Postwar Economic Problems*. New York: McGraw-Hill, 1943.
- Taussig, Frank W. "Capital, Interest and Diminishing Returns." *Quarterly Journal of Economics*, vol. 22 (1908).
- *Principles of Economics*. New York: Macmillan, vol. 1, 1925, vol. 2, 1930.
- Thomas, Rollin G. *Our Modern Banking and Monetary System*. New York: Prentice-Hall, 1942.
- Titus, Paul M. "Can We Stop Inflation?" *Bulletin of the National Tax Association*, vol. 29 (1944).
- Underhill, H. Fabian. "The Incidence of Pay Roll Taxes," *Quarterly Journal of Economics*, vol. 57 (1942).
- U. S. Bureau of the Census. *Wealth, Debt, Taxation, 1913*. Washington, D. C.: Government Printing Office, 1915.
- U. S. Bureau of the Census. *Governmental Finances in the United States: 1942*. Washington, D. C.: Government Printing Office, 1945.
- U. S. Board of Governors of the Federal Reserve System. "Business Finance in the War," *Federal Reserve Bulletin*. Washington, D. C.: Government Printing Office, July 1944.
- *Federal Reserve Charts on Bank Credit, Money Rates and Business*. Washington, D. C.: Government Printing Office, 1941.
- "Proposal for Guarantee of Industrial Loans by Federal Banks," *Federal Reserve Bulletin*. Washington, D. C.: Government Printing Office, June 1944.

- *Federal Reserve Bulletin*. Washington, D. C.: Government Printing Office, Dec. 1945.
- Villard, Henry H. *Deficit Spending and the National Income*. New York: Farrar & Rinehart, 1941.
- Viner, Jacob. "The Short View and the Long in Economic Policy," *American Economic Review*, vol. 30 (1940).
- Wald, Haskell P. "A Comparative Analysis of Three Variations of Retail Sales Taxes." *American Economic Review*, vol. 34 (1944).
- Walker, Edward R. *From Economic Theory to Policy*. Chicago: University of Chicago Press, 1943.
- Wallace, Donald. "Kinds of Public Control to Replace or Supplement Antitrust Laws," *American Economic Review*, vol. 30 (supplement 1940).
- Wallich, Henry C. "Fiscal Policy and the Budget," *Economic Problems of Latin America*. New York and London: McGraw-Hill, 1944.
- "Income-Generating Effects of a Balanced Budget," *Quarterly Journal of Economics*, vol. 59 (1944).
- "Public Debt and Income Flow," *Public Finance and Full Employment*. Washington, D. C.: Board of Governors of the Federal Reserve System, 1945.
- Warburton, Clark. "Monetary Theory, Full Production and the Great Depression," *Econometrica*, vol. 13 (1945).
- Wehrwein, Carl F. "Taxes and the Consumer." *American Economic Review*, vol. 28 (1938).
- Wernette, John P. *Financing Full Employment*. Cambridge, Mass.: Harvard University Press, 1945.
- Williams, John H. "Deficit Spending," *American Economic Review*, vol. 31 (supplement 1941).
- Williams, Randall S., Jr. "Fiscal Policy and the Propensity to Consume," *Economic Journal*, vol. 55 (1945).
- Wright, David McCord. *The Creation of Purchasing Power*. Cambridge, Mass.: Harvard University Press, 1942.
- "The Economic Limit and Economic Burden of an Internally Held National Debt," *Quarterly Journal of Economics*, vol. 55 (1940).
- "A Neglected Approach to the Acceleration Principle," *Review of Economic Statistics*, vol. 23 (1941).
- "Professor Knight on Limits to the Use of Capital," *Quarterly Journal of Economics*, vol. 58 (1944).

## INDEX

- Acceleration principle: conditions for, 23, 136; income creation and, 24, 25, 27, 32, 33, 40, 136-140; result of consumption, 23, 136-137; result of investment, 24; uncertainties as a result of, 84, 137-138. *See also* Induced investment
- Adjustment period, 10-11, 126-130, 161
- Administration of policies, 148-150
- Anderson, B. M., 1
- Anti-restrictionist policy, 147, 149-185
- Anticipations: of investors, 21-22, 23, 135-136, 157-158; of taxpayers, 21-22, 40-41, 135; of tax receipts, 136
- Available income, 43, 47-49, 51, 54, 57-59, 63, 66, 99, 166
- Average propensity to consume, 43-52, 54, 56, 66, 99, 103, 160, 184, 185
- Banking: central, 129, 148, 174, 202, *see also* Monetary policy; offsetting decline in individual saving, 12, 16-17, 21, 39, 55 n, 56, 59, 69-70, 93, 100, 102; taxation of, 39
- Beveridge, Sir William, 1
- Bonds: government, *see* Government debt; tax capitalization and, 9-10, 102, 117
- Budget, 119-120, 154, 189-195
- Business cycle, 152-155, 170, 172, 189-191
- Capital: marginal efficiency of, 20, 35, 39, 41, 55, when elastic, 20, 57, 69, 73-76, 86, 94, when inelastic, 55, 59-61, 70, 73, when unity, 20, 39, 42, 53, 55, 58-61, 71-73; in modern economy, 85-91; lending and investing of tax receipts and capital, *see* Government, Tax; through time, 141-142; using improvements, 6, 39 n, 85, 187
- Capitalization of tax, 14, 102-103. *See also* Security market
- Classicists, omissions of, 2-4
- Comparison of policies: concerning administration, 148-150; bases for, 147-148; long-run, 162-169
- Competition, monopolistic, 130-133
- Conservation of forests, 29
- Consumption: function, 43-52, 54, 55, 57, 63, 99-101, 104, 113-114, 133-135; lag in, 138; payment of taxes out of, 8-9, 15-16, 54, 57; shift in consumption function, 41, 134-135, 143, 157, 184-186; taxes, 1, 10-12, 46-47, 49, 51-52, 56, 65, 69-71, 97-101. *See also* Acceleration principle
- Corporation: ignores tax, 20-21, 56, 93-97; income tax, *see* Tax; saving of, 19; supply price of saving, 19-20
- Debt, government, *see* Government debt
- Deflation, and imposition of taxes, 55, 112-113, 117, 134-136, 143-144, 151, 155
- Depression: features, 4-6; prolonged periods, 4-6
- Distribution of income: over long periods, 107-108; and progressive taxation, 51, 103-111, 122-123; and saving, 35-37, 44, 98-99; and supply price of investors, *see* Supply price of investors
- Electrification, rural, 31, 121
- Employment, 4; full, 3, 5-6, 51, 63
- Equilibrium rate of interest, 39, 53-54, 59, 78, 94
- Equilibrium, static, 6

- Fiscal policy, 1, 6, 153-154  
 Fisher, Irving, 104, 124  
 Foreign balance of payments, 142-145  
 Formulas, 52-57, 66-73, 76-77, 80-82, 95-96, 106-111, 122-123, 163-169, 200, 210
- Government: deficit spending by, 68, 120, 148-149, 150-151, 152, 161-169, 171, 172, 178, 199-211; lending without charge by, 27-29, 33, 35, 67, 82, 102, 127, 131-132; methods of encouraging private enterprise, 32-35, 71-75
- Government debt: income ratio, 195, 203; interest on, 150-151, 164-167, 194-195, 200, 205-206, 207-208, 209 n; limits to, 202-203, 206, 209; monetary aspects of, 201-202, 206; and taxation, 197-199
- Groves, H. M., 15 n
- Growth: in income, 45, 203; in production, 5
- Hansen, Alvin H., 1, 6, 103, 120-121  
 Housing project, 30, 121
- Idle money, 9, 20  
 Income, growth in, 45, 203  
 Income tax, *see* Tax  
 Inflation, 165, 195-197, 201, 202, 206  
 Initial income increment, 47, 50-59, 61, 62-64, 69, 72, 79-81, 84, 106-107  
 Innovation, *see* Technological progress  
 Insurance, 48, 173-178, 189, 190  
 Interest rate: on government debt, *see* Government debt; raised by taxation, 53-54, 59-61, 73, 76-77, 92-93, 104. *See also* Equilibrium, Supply price
- Investment: dynamic, 23-24, 42, 39 n, 88-89, 172, 182, 183, 189; increased by tax outlay, 22-27, 31-33, 73-82; induced, 23-25, 39 n, 138-140, 182; result of tax on, 10-11, 12-15, 16-17, 59-61, 71, 73-75, 134-136, 143, 190
- Keynes, J. M., 5, 103, 120-121
- Land taxes, 12, 14-15, 49, 52
- Lending by government, *see* Government  
 ment  
 Limits to income creation, 40, 54-57, 67, 70-82, 83-85, 96-97, 123  
 Liquidity preference, 9, 27, 129, 174  
 Long run, 46 n, 49, 51, 99, 113-115, 120, 155-162, 175-180
- Malthus, T. R., 2 n  
 Marginal efficiency of capital, *see* Capital  
 Marginal propensity to consume, 40, 43, 45-46, 49-54, 63-66, 68, 200, 208  
 Marshall, A., 2 n, 3 n, 49  
 Mill, J. S., 2 n  
 Monetary policy: advantages of, 148, 150, 152, 153, 156, 157, 174-175; disadvantages of, 158, 161, 162, 170, 172
- Monopoly: and income creation, 130-133, 177; and prices, 131, 159-160  
 Multiplier: coefficient, 68, 71-72, 79, 81-82, 91, 95; complex, 65-69; simple, 63-65, 66, 68, 69, 79, 81, 163; tax, 66-69, 79-81, 95, 108, 163
- Pigou, A. C., 2 n, 3 n  
 Policy: need for an over-all, 170-172; opposition to, 150-152  
 Prices: stability of, 126-128, 154-155, 159, 180-181; of factors of production, 38-39, 128-130  
 Price level and overexpansion, 127  
 Production, growth in, 5  
 Profits: and income creation, 51, 84-85, 173; and lending or investing of tax receipts, 27, 32, 76, 83-84  
 Public finance, maxims of, 188-211
- Railroads, 34, 87-88  
 Ratio: of debt to income, 180, 202-203, 206, 209; of tax outlay to private investment, 31-32, 76-77, 80-81, 83-85, 94-95, 124-125, 127, 132, 145; of ultimate income increment to total government outlay, 162-169, 205  
 Reasonable objective, 172-173  
 Reconstruction Finance Corporation, 30, 35  
 Rent, 14  
 Ricardo, D., 2 n

- Rising income, 64, 137-138, 160-162, 178, 180-187. *See also* Multiplier
- Saving: of corporations, 18-19; schedule of, 12, 15-20, 35-37, 42, 53, 55, 57-59, 74 n, 92-93, 148-149; source of tax payment, 15, 16, 19, 26, 58
- Security market, 9, 10, 114-115
- Short run, 21, 22, 114, 133-136, 152-155
- Source of tax payment, 3, 8-10, 12-13, 58
- Stagnation, 3
- Subsidies, 3, 25-26, 32-34
- Supply price of investors, 11-12, 16, 19, 31-32, 35-37, 39, 53, 55, 56, 59-61, 71, 73-78, 80
- Tariff, 26
- Taussig, F. W., 2 n
- Tax: income, 15-22, 46-47, 49, 59; corporation income, 15 n, 18-22, 116-118; personal income, 15-19, 35, 65; progressive, 15-18, 20, 37, 39, 51, 65, 103-111, 122-123, 192-195; property, 10-15, 46-47, 49, 52, 65, 112-116; proportional, 16, 35, 37, 39, 42, 51, 53, 54, 57, 65, 66, 69-70, 92, 103, 109-110; outlay for consumption, 50, 52, 54, 59, 67, 71-75, 78, 138-139, 183; outlay to encourage private investment, 3-4, 6-7, 14, 20, 22-33, 40, 71-75, 78, 79-82, 94-97, 102, 127, 131-133, 138-140, 183
- Taxation: advantages of, 152, 162-169, 178-180, 199-211; compared to deficit spending, 150, 162-169, 199-211; disadvantages of, 151, 155; trend in, 185-187
- Tax receipts: instability of, 191-192; lag in, 66, 136, 155; uncertainty of, 136
- Technological progress, 6, 85-91, 186-187, 201, 206
- Ultimate income increment, 50, 57, 62, 63-65, 70-71, 79, 80-82, 95-97, 100-101, 104-105, 107-111, 122-125, 143, 162-163, 166-167. *See also* Limits to income creation
- Union policy, 86-87, 128-129, 155, 180
- Variables, 41-43
- Wages, *see* Union policy