

AUTOMATIC STABILIZATION

WITH SPECIAL REFERENCE TO THE BRITISH TAXES ON INCOME

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by

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PREFACE

The expansion of the government's economic activities and the means of financing them has given rise to a fiscal system which tends, in a limited degree, to produce an automatic stabilizing effect on the whole economy. It can hardly be claimed that automatic regulation was an important, or even a specific concern in the formulation of the present revenue and expenditure system, but any compensatory effects that happen to exist are nonetheless important to a thorough understanding of the economy and the means of controlling it.

It is the purpose of this study to examine built-in flexibility in the light of the British tax system. Although a number of investigations of this nature have been carried out in the United States, almost no comparable empirical studies have been published in this country. The work of earlier American investigators has been drawn upon in the following chapters in an attempt to develop a system of analysis appropriate to British circumstances and to apply this system in order to uncover the pattern of movement and impact of some of the most important automatic fiscal devices in the British economy.

The study was undertaken in the belief that the development of an adequate means of dealing with built-in controls, and at least a first approximation toward the measurement of the contribution of automatic stabilizers, would be a constructive contribution to the understanding of the economy and the means of controlling its perturbations.

The main contribution of the study is therefore an extension of the theory of built-in stabilizers and, more particularly, an empirical investigation of the sensitivity and effect of the major direct taxes. The measurement process incorporates coefficients of spending behaviour, though it has not been the present purpose to undertake an independent quantification of propensities.

Chapter I consists of introductory remarks concerning the development of the stabilization function of governments and fiscal controls in particular. This necessarily involves a consideration of the objectives of economic policy and the scope for the pursuit of short-term economic policy through the budget. Chapter II is devoted to a discussion of the analytical considerations involved in fiscal controls and the special implications of automatic devices. This is followed in Chapter III by a fairly detailed examination of the automatic devices in the British tax structure and the way in which they can be expected to operate.

The first three chapters are designed to introduce the problem and outline the considerations involved in the theory and calculations that follow in the second half of the study. Chapter IV is concerned with the development of a theoretical framework which is employed in the subsequent chapter to quantify the built-in flexibility and stabilizing effect of the important direct taxes in Britain. This is designed to throw light on the pattern of flexibility and its impact under different forms of economic fluctuations. The final chapter consists of a summary of the empirical observations and some general comments on the limitations of the method.

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CHAPTER I

INTRODUCTION: ECONOMIC STABILITY AND THE ROLE OF GOVERNMENT

"It is certain that the world will not much longer tolerate the unemployment which, apart from brief intervals of excitement, is associated - and in my opinion inevitably associated - with present-day capitalistic individualism. But it may be possible by a right analysis of the problem to cure the disease whilst preserving efficiency and freedom."

(John Maynard Keynes, the General Theory)

The maintenance of economic stability has become an important concern of modern governments. Although some aspects of the potential regulatory power of the state have been recognised for many years, developments in the theory and practice of stabilization policies have been particularly rapid during the last three decades. This introductory chapter consists of a comment on the role of the state in regulating the economy, its objectives, and the means at its disposal. The purpose of this outline is to frame the succeeding theoretical and empirical discussion in its proper perspective. At the same time, the context and scope of the subject matter to follow can be suitably outlined.

1. The Development of Stabilization Controls

In most advanced countries of the western world a large share of the national income is now channelled through the public sector. The economic activity of the public sector is therefore bound to

affect the economy as a whole, and hence it is important to consider the ways in which public economic activity can be made to promote the government's economic policy.

The recent history of the public sector in the United Kingdom, as in many other countries, has been marked by a very substantial increase in its economic importance not only in absolute terms but also relative to the rest of the economy. A significant increase in the size of the public sector took place around the turn of the century, but the most important increases were associated with the two world wars; after which temporary declines from exceptionally high levels of taxation and expenditure were followed by a reversion, starting from successively higher levels, to the long-term upward trend. At present the central government and public enterprises account for roughly one quarter of all economic activity.⁽¹⁾

War appears to have acted as a powerful catalyst in hastening a process which might otherwise have been far more protracted. However, there has been an underlying tendency for the state to provide services over and above its traditional responsibilities for defence and law and order. The responsibility for satisfying an increasing range of wants, hitherto satisfied individually or not at all, has been accepted by the state. To a large extent this reflects a change in attitude toward the goals of economic and social policy and the optimal balance between public and private

(1) In 1957 general government and public enterprises accounted for 22 per cent of gross national expenditure and 24 per cent of factor income, occupied 25 per cent of the active population, and gave rise to 42 per cent of all gross fixed investment. See the United Nations Economic Commission for Europe, "The Economic Significance of the Public Sector in some Western European Economies", a study in Economic Survey of Europe in 1959, United Nations, Geneva, 1960.

spheres of decision.

For convenience, the economic impact of the public sector can be categorized under three heads: its influence on the allocation of resources through providing for the satisfaction of collective wants; the welfare implications of public activity, including the distribution of income arising from the pattern of government taxation and expenditure; and the effects of public sector operations on macro-economic variables such as employment, production, and prices.⁽²⁾ The present study is concerned with the last of these considerations, namely the influence of the public sector on the level of certain economic aggregates.

The growth in the economic importance of the public sector has stimulated a theoretical and practical interest in the management of public activities as a means of economic control. It is by no means a recent discovery that the financial machinery of the state can be used to mitigate economic instability. For well over a century it has been reasonably well established that the government could exercise some control through regulating the supply of money. In the simple classical model of the capitalistic economy, with wages and prices flexible, and an implicit marginal spending propensity of unity, adjustments in the money supply could be shown to influence (or stabilize) the level of prices. However, general economic fluctuations in this context must take the form of temporary disequilibria, and the flexibility of money wages ensures that the system will always tend towards an equilibrium where the full

(2) Richard A. Musgrave has provided a convenient nomenclature for these functions, namely the allocation branch, the distribution branch, and the stabilization branch of the government budget. The Theory of Public Finance, McGraw Hill Book Co. Inc., London, 1959, Chapter 1.

quantity of labour offered is employed at the appropriate level of real wages. Since unemployment in this model is self-correcting, the need for stabilizing output and employment does not arise. Government taxation and expenditure changes have an effect only on the price level, and only insofar as they influence the money supply. (3)

The classical model, however, incorporates assumptions which have serious practical implications. The development of macro-economic theory, which may be said to have originated in the work of J.M. Keynes (4), has paved the way towards an understanding of the possibilities of influencing the level of economic activity through adjustments in public revenues and expenditures and particularly the balance between the two sides of the government budget. Perhaps the greatest contribution of the Keynesian model consists in demonstrating that an equilibrium level of economic activity can be reached without reference to the level of employment. Briefly, equilibrium can exist whenever total spending just balances total income, which implies a coincidence between planned saving and planned investment. In this model, unlike the simple classical case, money can be either spent or saved, and in periods of pessimism adjustments in the money supply may have no direct effect because of offsetting influences in the inducements to consume and invest.

(3) For a detailed discussion of the implications of the assumed relationships in economic models for stabilization see Richard A. Musgrave, op. cit., pp. 407-411.

(4) Especially his The General Theory of Employment Interest and Money, Macmillan and Co. Ltd., London, 1936.

Moreover, the supply of material output is assumed to be highly elastic up to the point of full utilization of resources, so that prices might be considered constant as long as unemployment prevails.

Stabilization policy in this case is directed at overcoming the equilibrium of the system (if necessary) in order to shift the intersection of the supply and demand schedules to a point at or near the level at which full employment exists. Monetary measures will be effective only as long as spending responds to changes in liquidity. Beyond this, however, the state can directly or indirectly influence the level of spending by fiscal means, which involve either encouraging or restricting private spending by operating on private disposable income, or by changing the level of the public share of total spending.

The great depression proved the Keynesian precept that economic decline could no longer be assumed to be merely a temporary disequilibrium, and the helplessness of credit controls not only emphasized as never before the need for more effective government control over the economy, but also predisposed public opinion to accept, if not demand, more state intervention.

But the emergence of fiscal policy was dependent, to some extent at least, on the growth of the public sector, referred to earlier. The increasing importance of the government budget not only focused attention on the impact of taxation and public spending during the late 1930's and war years, but also provided the vehicle which could carry an effective fiscal policy. Finally, the tremendously increased availability of statistics during the war - particularly the national income accounts after 1941 which were designed to throw light on the problems of war finance and

inflationary pressure - provided the data essential for the formulation of compensatory controls by revealing imbalances in the private sector.

"In 1941 with the celebrated budget of Sir Kingsley Wood a new technique of budgeting was manifested. The financial budget ceased to be regarded as a mere forecast of the financial account of the Government and became the annual blueprint for a mechanism designed to preserve the balance of the economy, with particular reference to the war-time financial problem of inflation. The structure of the budget for the financial year was closely linked with the calculations of the expected national income and the official decisions regarding its disposal." (5)

Thus public finance, in addition to its traditional role of providing public facilities and services, and its rather more recent function in redistributing income, has been given a third role, that of promoting economic stability.

During the war and until 1951 monetary controls were virtually abandoned and control depended upon fiscal measures and the extensive use of direct controls. This period witnessed a tremendous growth in the understanding and use of the budget as a regulating device; and developments in Britain were quickly taken up in North America and elsewhere. (6)

Since 1951 direct controls have largely been dispensed with, and monetary and fiscal controls have both played their part in

(5) Edey, H.C. and Peacock, A.T. National Income and Social Accounting, Hutchinson's University Library, London 1954, p. 120.

(6) For a discussion of the development of the budget as the centre for economic control, see Samuel, H. Beer, Treasury Control: The Co-ordination of Financial and Economic Policy in Great Britain, Clarendon Press, Oxford, 1956, Chapter III.

stabilization policy. It is by no means a closed question, however, how much reliance should be placed on monetary methods on the one hand, and fiscal adjustments on the other. The advantages and limitations of the two are very different.⁽⁷⁾ Nevertheless, fiscal policy, it can reasonably be assumed, will continue to be an important means towards offsetting fluctuations. Even if one were too timid to agree with Mrs. Hicks that "... fiscal policy must in future be the senior partner"⁽⁸⁾ to credit controls, it is safe to draw the more cautious conclusion of the Committee on the Working of the Monetary System.

"There will always therefore remain the question how much reliance, in a given situation, should be placed on monetary measures and how much on these others; and governments may wish to change their relative use from time to time. The particular nature of a situation will of course have an important bearing on the choice to be made" ⁽⁹⁾

Although monetary and fiscal policy are usually treated separately, and this study restricts itself to the latter, it must be borne in mind that the use of one form of control will have repercussions on the other. This is particularly important in connection with the monetary implications of budget surpluses or deficits. Any budget, except one where cash outlays happen to coincide with cash receipts, will affect the money supply, and

(7) No attempt is made here to prove the superiority of either fiscal or monetary methods of stabilization. A thorough discussion of the problems associated with various forms of monetary controls is to be found in the Report of the Committee on the Working of the Monetary System, H.M.S.O., Cmd. 827, London, 1959 (henceforth Radcliffe Report). The problems of fiscal adjustments are discussed in the following chapter.

(8) Ursula K. Hicks, British Public Finances, their Structure and Development 1880-1952, Oxford University Press, London, 1954, p. 169.

(9) Radcliffe Report, op. cit., para. 66.

government debt management will influence the claim structure. It is therefore essential that fiscal measures be pursued in such a way that their monetary repercussions do not frustrate, and preferably complement, the objectives of fiscal policy. Thus, for example, in depression, when fiscal policy requires a deficit and monetary policy requires "easy" money, the deficit should be financed in such a way as to contribute to the money supply, such as by the printing of new money or the sale of debt to the central bank thereby increasing its reserves.

The post-war economic situation shows important differences from pre-war conditions. Firstly, there has been rapid, and more or less continuous economic growth. Secondly, unemployment has stayed within relatively narrow margins and demand has never fallen short of output by more than a few per cent. Finally, there has been a persistent increase in price levels since the war. Post-war scarcities, pent-up demand, rising import prices, currency devaluation, and the Korean War kept a heavy pressure on prices for a number of years, and only recently have the possibilities for price stability appeared more promising.

In this situation the role of stabilization policy is rather different from that of the inter-war period, and hence from what was envisaged in the early literature on compensatory finance. A situation of large-scale unemployment has not arisen. The problem has been to initiate quick marginal adjustments in demand to keep the economy on the narrow path of full employment without price inflation. This requires highly skilled direction, and calls for highly delicate and flexible instruments of control.

Thus, although circumstances appear to have changed the nature of the problem, for the time being at least, stabilization policies -

policies aimed at the maintenance of a high level of economic activity without rapid price inflation - are not likely to become less important in the future. The scourge of involuntary unemployment, the losses to all groups from fluctuating incomes and prices, and the manifestation of a rival economic system that claims to be immune to the perversity of business cycles, have given great impetus to stabilization programmes. It is hardly an exaggeration to say that the national governments of all advanced countries now accept the responsibility of maintaining a high and stable level of employment. (10)

2. Fiscal Controls and Economic Policy

Since budgetary adjustments represent only one of several instruments of public control, they must be coordinated with other policies if a maximum contribution to economic policy as a whole is to be achieved. Indeed, recent literature has laid increasing emphasis on the necessity of dealing with the problems of public

(10) In Britain, "The Government is pledged to foster conditions in which the nation can, if it so wills, realize its full potentialities for growth in terms of production and living standards." The Economic Implications of Full Employment, a White Paper presented to Parliament, H.M.S.O., Cmd. 9725, London, 1956, para. 25; in Canada, "... the Government has stated unequivocally its adoption of a high and stable level of employment and income, and thereby higher standards of living, as a major aim of Government policy," Employment and Income, a White Paper presented to the Parliament of Canada, H.M.C.S.O., 1945, p.23; and in the United States, "... it is the continuing policy and responsibility of the Federal Government to use all practicable means for the purpose of creating and maintaining conditions under which there will be afforded useful employment opportunities including self-employment, for those able, willing and seeking to work, and to promote maximum employment, production, and purchasing power," preamble to the United States Employment Act of 1946.

finance, and compensatory finance in particular, in the full context of other economic objectives.

An understanding of the full effects of any particular measure requires a knowledge of how the economy operates and the inter-relationships of the various parameters and variables. This involves the nature of the economic "model" which is adopted for purposes of analysis. The conception of the model, expressed mathematically or merely implicit, governs the extent to which different objectives are compatible, the means of achieving the objectives in different circumstances, and the way in which the use of a particular control in pursuit of a given objective will affect other objectives.

However, given various possibilities within the framework of the model, not all the methods of control can be considered acceptable. Some controls must be dismissed because they fall outside the independent jurisdiction of the domestic authority, or because the authorities are under an obligation not to exercise them. Such is the case with exchange rate adjustments and import and export controls. Other controls will be inadmissible because of public opinion or the convictions of the prevailing political ideals. By and large, most direct controls fall into this category. Finally, certain measures may be impracticable because of institutional circumstances which limit the authorities' freedom of control or the speed with which changes can be made. These institutional considerations are discussed in Chapter II in connection with the practical problems of fiscal policy.

The extent that given objectives can be reached depends, therefore, not only on the particular nature of the economic structure

but also on the instruments of control which are practical and acceptable. If a number of measures can be used the authorities have more freedom of manoeuvre, and less drastic use of any particular control is required.

3. Objectives of Stabilization Measures

The Keynesian principles were originally formulated with a view to overcoming unemployment during periods of stagnation. They can, of course, be applied to the control of inflation, as can monetary measures. Indeed the role of stabilization policies is usually taken to mean the maintenance of both price level stability and full employment.

The desirability of full employment is readily appreciated. That a substantial proportion of people should not be subjected to involuntary idleness is generally accepted on social grounds alone. Not only does unemployment mean that resources are idle and hence the usual objective of maintaining a maximum level of output is not being fulfilled, but it can also cause serious dislocations in the structure of the economic system. Thus the health of the economy, as well as the economic security of individuals, requires that high percentages of unemployment be prevented.

However, there is some ambiguity in the term unemployment. In its common usage, unemployment refers to idle manpower, but it can be applied to unused resources of other kinds or (particularly) to idle productive capacity. Unemployment or underemployment of other inputs or plant capacity cannot always be identified with

unemployed labour. Labour unemployment can exist in the face of high capacity utilization and vice versa. However, broad movements in the utilization of productive capacity can be expected to be associated with roughly similar movements in labour employment. Following well-established precedent, therefore, the term unemployment will be used here to refer to either idle capacity or labour. (11)

The precise point at which full employment exists, whether of plant capacity or of manpower, is necessarily to some extent indeterminate. Full use of capacity might be theoretically defined as that point where short run marginal costs begin to increase sharply above long run average costs. (12) Full manpower employment can be comparably defined as that level above which additional labour is forthcoming only at a significantly higher price. In any event, full employment of labour must refer to a specified minimum of registered unemployment since there is at all times a certain amount of "frictional" unemployment consisting of people in transition from one job to another. This minimum can be decided only with reference to the structure of the economy, seasonal factors, the nature of the registration system, public opinion, and other social circumstances (such as the prevalence of disguised unemployment) in any particular country.

The arguments in support of price stability are equally persuasive. A rising price level represents a tax on those with

(11) Divergences between manpower and capacity employment involves complicated technical as well as definitional problems which cannot be entered into here. For a discussion of these problems see Albert Rees, "The Measurement and Behaviour of Unemployment", National Bureau of Economic Research, New York, 1957.

(12) For a discussion of the problem of defining full employment, see Albert Rees, ibid.

relatively fixed incomes, who usually happen to include a substantial proportion of persons with low incomes, and a corresponding subsidy to those whose incomes are flexible. On welfare grounds, any regressive redistribution of real income is usually considered undesirable. Furthermore, price instability makes the measurement of value inconsistent through time. By affecting investors' evaluations of expected returns and hence influencing the direction and form of investment, unstable money value interferes with the regular growth of the economy.

There are, nevertheless, circumstances in which a change in the value of money may be considered advantageous. Inflation can prove useful in relieving the burden of a heavy national debt, in creating an atmosphere of business optimism, in adjusting to foreign exchange, or in accommodating money wage increases without sacrifice to other factor shares. But unless the satisfaction of some such particular need more than outweighs the advantages of a stable value of money, price fluctuations, because of their effect on redistribution, uncertainty and distortion, can be taken as undesirable.

It should be noted, however, that the object of stabilization policy is not to prevent all fluctuations in the components of the economy. Shifts in the direction of investment and consumption spending are necessary and indeed inevitable in the process of economic growth and development. The purpose of stabilization is therefore to mitigate or offset the effect on total income and expenditure of changes in particular components or sectors of the economy.

The twin objectives of price level stability and full employment are by no means complementary. Far from the Keynesian assumption

that supply is perfectly elastic until the full employment level of output is reached, specificity of resources and differences in the rate of increase of demand for the products of different industries result in a bidding up of costs and prices in some sectors of the economy while unemployment may prevail in others.⁽¹³⁾ Particularly in that sector of the economy characterized by strong unions and large firms which have considerable control over prices, wage demands are often granted and covered by price increases even if some idle capacity exists. In the concentrated industries these pressures on prices and wages react on each other to cause a general increase in prices. This process will tend to continue unless there is sufficient slack in the economy to resist these increases, but the effective level of slackness may be considerable. Nevertheless, the desirability of both price stability and full employment is by no means diminished by the extent of their incompatibility.

4. Scope of the Following Chapters

This conflict of objectives as full employment is approached implies that stabilization policy must aim at maintaining the highest level of employment and incomes consistent with reasonable price stability. The discussion in the following chapters is therefore

(13) It may be noted that Keynes himself recognised this; "Since resources are not interchangeable, some commodities will reach a condition of inelastic supply whilst there are still unemployed resources available for the production of other commodities", and "Thus, instead of constant prices in conditions of unemployment, and of prices rising in proportion to the quantity of money in conditions of full employment, we have in fact a condition of prices rising gradually as employment increases." J.M. Keynes, op. cit., p. 296.

concerned with the primary objective of fiscal policy; the prevention of fluctuations in the level of prices and incomes. For simplicity, it is assumed that movements from one equilibrium level of income to another does not involve any change in the general price level, though this assumption clearly requires reconsideration in the context of the control of inflation.

Nearly all the complicated aspects of economic growth are omitted altogether from the analysis. This is justified on two grounds. Firstly, economic growth has become virtually a separate study and in the present context the theoretical equipment is in a very undeveloped state. Secondly, the usefulness of automaticity in fiscal adjustments is concentrated in the short run, since over the long period changes in the structure of the provisions for taxation and expenditure, and discretionary adjustments within existing provisions take on much greater importance. It should be pointed out that, although automatic fiscal adjustments bear interesting implications for economic growth, the measurement of flexibility and its immediate impact is not affected by growth considerations.

In the following chapters, built-in flexibility is considered as a weapon of fiscal policy, and special reference is made to the forces which work through the public sector in the United Kingdom. Its contribution lies primarily in what is believed to be the first empirical measurement of the quantitative impact of flexible devices in the United Kingdom. In order to accomplish this, it is first necessary to extend the theory which has been developed by previous investigators and to devise a conceptual framework which will lend

itself to the measurement of the specific magnitudes to be analysed.

Most of the contributors to the theory of automatic controls, who will be drawn upon in later chapters, have been American. The predominance of literature from the United States probably reflects the better opportunity in that country for empirical analysis in this field. In addition to the greater availability of relevant figures and statistics, the distaste for discretionary changes in the United States has left the tax structure comparatively rigid, which facilitates an examination through time of the extent to which the tax system responds to income changes. In analysing the British case it has been necessary to adopt a method which circumvents the necessity of comparing revenue levels between periods when differences in yield result from differences in statutory provisions.

The method involves a discussion of fiscal controls which is designed to show up the special implications of automatic devices, and the problems associated with them, and is illustrated by an examination of the built-in controls operating in the United Kingdom. The empirical analysis follows upon the development of a theoretical framework which predisposes an admitted bias towards a Keynesian approach to economic analysis. Nevertheless, no attempt is made to summarise or re-develop Keynesian theory in general. Those features of macro-economic analysis which are necessary for the development of the analysis are incorporated in the discussion as they are required.

CHAPTER II

FISCAL CONTROLS AND AUTOMATICITY

"It is obvious that a compensatory fiscal policy becomes complicated not only because several ends are to be realized simultaneously, but also because careful timing of the various measures seems to be necessary if the ends are to be achieved at all." (Bent Hansen*)

The essence of fiscal control, as it has developed in the context of macro-economic theory, consists in off-setting broad movements in the private sector of the economy by throwing the weight of government taxation and expenditure programmes in the compensating direction. In principle, this procedure is simple enough: when demand is insufficient or declining the state attempts to encourage spending by increasing its own expenditures and by leaving investors and consumers with more spendable income through tax reductions. Conversely, when demand is excessive and prices threaten to rise, the state withdraws more spending power and spends less itself.

In practice, however, there are important difficulties involved, and changes in government transactions are likely to initiate adjustments throughout the ramifications of the economy. These induced reactions may or may not be desirable. The effects of fiscal adjustments other than on the stability of the economy are not of primary concern here and will be summarized only briefly.

* The Economic Theory of Fiscal Policy, p. 250.

A review of fiscal repercussions is necessary, however, if only to help place fiscal policy in its full context, and to provide a basis on which the full implications of automatic adjustments can be demonstrated. This is the purpose of the present chapter.

Throughout this discussion it is important to bear in mind that stabilization is only one of a number of objectives of the public sector. It can hardly be expected that the pursuit of stability will never conflict with other aims of equal or greater importance, and the reconciliation of these objectives must often involve a compromise with stability. Nevertheless, the sheer size of the government budget in the national economy ensures that even relatively small changes on either the revenue or expenditure sides will have repercussions on a wide range of economic relationships. For the time being the discussion will be confined to the practical difficulties of fiscal control, particularly the effects likely to be felt in the short run.

For convenience, these considerations are here divided into four broad categories, namely problems of recognition and analysis, problems of implementation, problems of distortion, and some general implications for economic growth. After an examination of these problems for fiscal policy generally, the special implications of built-in mechanisms will be considered.

1. Problems of Recognition and Analysis

Fiscal control depends for its success first of all upon recognition of the need for a particular degree and form of corrective action. The corrective itself must be based on a

prediction of economic forces which in turn must be founded on an analysis of current trends in various sectors of the economy and in the economy as a whole. The precision of this analysis, finally, depends upon the accuracy, timeliness and coverage of economic statistics and other data available and the expertise of the analysts.

The fundamental importance of an appropriate and efficient informational system to provide the fiscal authority with the material required for an accurate analysis of trends is therefore obvious. Indeed, if the analysis proves incorrect or too late, the action taken may well aggravate the situation it was designed to correct.

The analysis and projection of economic trends is complicated by the fact that there is no single satisfactory indicator of movements in the economy as a whole, the relative importance of different indicators varies, and nearly all information is by its nature historical. The most generally accepted indicators of economic trends are figures of employment, investment plans, inventories, share prices and commodity markets. Besides these, world trade, price movements, income statistics and planned state expenditure warrant consideration in any forecast of the needs of the economy. Unfortunately, none of these indicators is infallible; and each one is susceptible to fluctuations which may reflect trends in only a particular sector of the economy or movements of a very temporary or minor nature.

In spite of the importance of economic prediction, it would appear that this is a field in which a good deal of work remains to

be done. (14) Probably the only way to arrive at an accurate picture of the economy is to make a careful analysis of the unfolding business situation in as much detail and with as recent data as are available. Nevertheless, a great deal of care is required in allocating weights to the various indicators and in allowing for their differing degrees of precision and timeliness. In addition, the even more indeterminate but nonetheless important effects of the

(14) For a discussion of the problems involved in prediction, see Geoffrey H. Moore, "The Diffusion of Business Cycles", in Economics and the Public Interest, (Robert A. Solow, Editor) Rutgers University Press, 1955, pp. 35-64; and J.A. Estey, Business Cycles: Their Nature Cause and Control, 3rd edition, Prentice-Hall Economic Series, New York, 1947, Chapter 19. Some of the implications of imperfect information are dealt with by Bent Hansen, The Economic Theory of Fiscal Policy (translated from the Swedish), George Allen and Unwin Ltd., London, 1958, Chapter XIX.

The seriousness of inadequate information has been underlined by the Organization for European Economic Co-operation:

"Prompt and adequate policy measures in the past have been hampered to some extent by lack of sufficient current information on economic developments. Improvements in short-term economic indicators need to be promoted."

Policies for Sound Economic Growth, Tenth Annual Review, O.E.E.C., Paris, March 1959, para. (xii); and again,

"We were struck by the fact that for many countries there remain major gaps and serious delays in the information that the authorities should have as a guide to prompt and adequate policy decisions. This is the case with straight statistical data (but) even more the case with analytical studies"

William Fellner, Milton Gilbert, Bent Hansen, Richard Kahn, Friedrich Lutz, Pieter de Wolff, The Problem of Rising Prices, O.E.E.C., Paris, May, 1961, p. 39.

economic and political situation in other countries and political policies at home must be accounted for.

Moreover, it is necessary to predict not only the direction but also the momentum of a trend, since a potentially major swing will require correctives which differ in form as well as strength from those suitable for minor fluctuations. Indeed, movements may occur which are in fact false alarms, and these must, if fluctuations are not to be created, be distinguished from real trends.⁽¹⁵⁾

The distinction between trends in particular sectors of the economy and movements in the economy as a whole is especially relevant in this connection. A decline in agriculture, for example, may have nothing in common with the rest of the economy but may reflect forces which affect this sector alone, such as a decline in the price of food imports, adverse weather, or reduced agricultural subsidies. Independent movements in the rate of housing construction and industries such as coal production provide other appropriate examples.

These structural problems complicate the analysis of the economic situation.⁽¹⁶⁾ Moreover, they point up the limitations of

(15) For a thorough examination of these analytical problems, see William Fellner, Trends and Cycles in Economic Activity, Henry Holt and Company, New York, 1956.

(16) The concern this problem causes in all countries is aptly exemplified in the following statement by the Deputy Minister of Trade and Commerce for Canada (Mr James A. Roberts):

"Here at home, in 1961, we face a most baffling paradox. At a time when our national production and income, our exports, our standard of living, our personal incomes and our employment are at or near record levels - in

(cont'd p. 22)

aggregative economic models, and suggest correctives of a specific rather than a general nature. Indeed, the usefulness of specific measures may have become overshadowed by the recent tendency to analyse the economy in terms of a few broad aggregates. (17) Such specific controls which are already exercised over agriculture and state controlled industry may be appropriate for other sectors as well. However, state interference with specific sectors, in addition to its political implications, gives rise to the danger of

(16) (cont'd)

other words, while we are enjoying general prosperity, we have unemployment and distress in a number of our industries."

Reported in the Canadian Weekly Bulletin, Vol. 16, No. 12, Department of External Affairs, Ottawa, March 22nd, 1961, p. 6. Conversely:

"Even though there may not be excessive general pressure on resources, such strains (in particular sectors) - which arose in the last boom in several countries, for example in coal, building, or certain steel products - can have inflationary effects over broad areas of the economy."

Policies for Sound Economic Growth, op. cit., para. (viii).

- (17) R.A. Gordon, for example, writes "Recent theoretical models have been of much too simple a form - too few variables and equations, too simple a system of lags, and too much dependence on unchanging relationships to reproduce the wide diversity of cyclical experience that we find in practice." "Types of Depression and Programs to Combat them", in Policies to Combat Depression, A Conference of the Universities - National Bureau Committee for Economic Research, Princeton University Press, 1956, (henceforth Policies to Combat Depression) pp. 7-22. E.E. Hagen takes a highly sceptical view of the possibility of precise prediction, and concludes: " it may be asserted that error in forecasting is too great to permit its use as a basis for timing changes in public policy." "Problems of Timing and Administering Fiscal Policy in Prosperity and Depression", American Economic Review, Vol. 38, May, 1948, pp. 417-429. Hagen points to automatic stabilizers as the alternative to adjustments based on forecasts.

conflict with other sectors and with the trend of the economy as a whole.⁽¹⁸⁾

Finally, faced with a fluctuation, the analysis must be capable of distinguishing between a secular and a self-correcting trend. This is because the appropriate corrective will depend to a considerable degree upon whether the problem is one of a general static equilibrium, either below the full employment level (stagnation) or with constant inflationary pressure, or one of moderating the swings in a dynamic cycle.⁽¹⁹⁾ An effort to moderate the amplitude of dynamic, or cyclical fluctuations would consist in correcting or off-setting the perverse movements of investment and consumption in the private sector by such readily flexible means as monetary and interest rate adjustments, flexible works programmes, or short-term revenue changes. These must be carefully timed and of appropriate intensity if the danger of aggravating the cycle is to be avoided.

A situation of static equilibrium either above or below the full employment level is in the nature of a structural problem. In this case, the solution involves shifting the point of equilibrium or the level of activity around which the cycles fluctuate. If the level of investment should decline, for example, without any off-setting increase in consumption, a stagnant condition of

(18) This problem will be referred to again later in connection with fiscal effects on the optimum level of public services, infra p. 52.

(19) This reflects what K.E. Boulding refers to as 'static precariousness' on the one hand, and 'dynamic precariousness' on the other. See his "Structure and Stability: The Economics of the Next Adjustment" in Policies to Combat Depression, pp. 59-74.

under-employment and undercapacity equilibrium as in the Keynesian case will result. This situation requires measures designed to disturb the spending and saving schedules of the private sector or direct adjustments in public spending ("pump priming") in order to initiate a shift toward the desired equilibrium.

It is therefore important to distinguish between cyclical and structural problems, but it would be wrong to suggest that they are not to some extent interdependent. An induced change in investment, by affecting productive capacity, alters the full employment level of output and hence itself imposes a requirement of increased or decreased consumption. Again, correctives of this kind may well induce temporary movements past the optimum which will become the first phase of a dynamic cycle. This underlines the importance of recognising the extent of the temporary swing, so that the corrective is neither inadequate nor sufficient to magnify the dynamic instability.

One authority has aptly summarized the problem of economic prognostication as follows:

"To forecast how the economy will move if the government does nothing is at all times a pertinent undertaking, but never more so than when it spurs the government into needed activity. Then come the questions not only of what kind of action and how much, but also at what dates. To one who has had some small experience of the time taken to get a policy across, the time taken to put it in train and the time taken for it to come to full fruition, a form of enquiry which starts by noting such differences between the potential and actual effects of a policy seems to have some realism. Moreover, it is one problem to keep an economy on the rails; it is a different and harder problem to get an economy back on to the rails after it has left

them. An analytical apparatus which can distinguish between the accumulated past error, the current error and the rate of change in error, can certainly aid our thinking even if it does not pretend to solve all our difficulties." (20)

2. Problems of Implementation

Quite apart from the ability of the information system to analyse and project current trends, lies the problem of initiating timely and effective corrective measures. The difficulty facing the fiscal authority in this connection consists firstly in the inflexibility in both the revenue and expenditure sides of the budget, and secondly, even if the required adjustments can be made, in the loss of time in bringing them about. For convenience these rigidities can be classified as 'programme inflexibility' and 'time inflexibility'.

Programme inflexibility

Programme inflexibility refers to the fact that a good deal of public spending and revenue cannot be readily altered for stabilization purposes. Again, the other objectives of public activity cannot always be subordinated to stability. But even apart from these

(20) R.C. Tress, "The Contribution of Economic Theory to Economic Prognostication", Economica, Vol. XXVI, No. 103, August, 1959, pp. 194-211. The same author offers the relevant word of warning: ".... I suggest the prognostication will lose much its value - it might even become misleading - unless it can raise its sights fully to the range of a fluctuation problem." Loc. cit. For a pessimistic view of precision in forecasting, see Milton Friedman, "A Monetary and Fiscal Framework for Economic Stability," American Economic Review, Vol. XXXVIII, June 1948, pp. 245-264; reprinted in his Essays in Positive Economics, University of Chicago Press, 1953, pp. 133-156.

considerations, the very nature of public functions lead to rigidities that make them alterable in the short run only with considerable dislocation and loss in efficiency.

In periods of excess demand when a contractionary policy is called for, it is not a simple matter to increase taxes quickly. Even apart from the problem of time lags, an increase in tax-revenues encounters more public resistance than a decrease, and may involve the necessity of establishing new administrative machinery. Lowering tax rates as an expansionary measure may well cause an excess demand problem after the situation has been corrected but reinstatement of the higher rates is resisted. The structural impediments to tax adjustments are admittedly largely political, but they are nonetheless considerable.⁽²¹⁾

A good deal more programme inflexibility is to be expected with short run adjustments on the expenditure side of the budget. Public investment spending, in particular, is not tractable in the short-term, in spite of the dominant place it was given in the early literature on fiscal control.⁽²²⁾ Indeed, two government White Papers reflect an almost complete reversal in official attitude toward manipulating investment in the interests of stability. In 1944 it was considered that:

(21) The postwar experience of a number of countries in the use of tax adjustments for counter-cyclical purpose is summarized by Angus Maddison, "The Postwar Business Cycle in Western Europe and the Role of Government Policy", Banca Nazionale del Lavoro Quarterly Review, No. 53, June 1960, pp. 99-148. See also The Economic Commission for Europe, op. cit.

(22) This was no doubt because the early literature on the subject, following Keynes, was concerned primarily with the correction of undesirable static equilibria rather than of short-term dynamic movements. The inappropriateness of investment changes for this latter purpose was not, however, immediately recognised.

"Public investment can be used more directly as an instrument of employment policy For the purpose of maintaining general employment it is desirable that public investment should actually expand when private investment is declining and should contract in periods of boom." (23)

By 1960, however, the government recognized the problems associated with, and hence the undesirability of such short-term alterations in public investment.

"The aim of expansion with stability conditions the pace of those of the programs which are designed to meet basic economic requirements and so the bulk of the work on them cannot lightly be deferred or advanced. Other programs are concerned with important social needs; these, too, as the 1944 White Paper itself pointed out, cannot readily be postponed though there is, on occasion, opportunity to accelerate or retard them marginally when the general level of demand requires. Finally, once work has begun on a project, it is usually uneconomic to attempt either to accelerate or to retard it at short notice. There is, therefore, a large proportion of public investment where it would not be sensible to try to engineer short-term variations in momentum to match changes in economic circumstances as rapid or as relatively mild as those experienced in recent years.

.... With these considerations in mind, the Government seek as far as possible to avoid interference with investment plans which have been approved." (24)

The above reference to "a large proportion" of public investment suggests the possibility that some fraction of this form of outlay may be manipulable; and that marginal adjustments in the rate of

(23) Employment Policy, A White Paper presented to Parliament, H.M.S.O., Cmd. 6527, London, 1944 (reprinted 1956).

(24) Public Investment in Great Britain, A White Paper presented to Parliament, H.M.S.O., Cmd. 1203, London, November 1960, para. 9 and 10.

spending can be made in other cases. Nevertheless, in view of the high capital intensity of most government investment undertakings, there are probably few projects which, because of technical considerations alone, can be undertaken, terminated, speeded up or retarded without increase in cost or waste of resources. Many of the difficulties associated with adjusting public investment spending are encountered in the control of private investment as well.⁽²⁵⁾ Governments can make a substantial contribution to economic stability, however, by managing capital expenditure programmes in such a way that the public investment spending proceeds in a steady fashion. This is particularly important when public investment is a large proportion of total capital formation in the economy.⁽²⁶⁾ A basic problem in this connection lies in the fact that public investment plans, in Britain at least (in contrast, for example, with France, with its Commissariat General du Plan), are, at best, only loosely co-ordinated.

The extent to which government consumption spending can be stemmed or expanded in response to short-term fiscal requirements depends upon the pattern of expenditure. Most of the largest items are likely to prove difficult to adjust at short notice. Defence spending, which comprises a large share of current expenditure, is liable to considerable fluctuation; but these fluctuations are the

(25) See Angus Maddison, op. cit.

(26) In 1959, the public sector, including local authorities and public corporations, accounted for 43.0 per cent of United Kingdom gross fixed capital formation. Central Statistical Office, National Income and Expenditure 1960. H.M.S.O., London, August, 1960 (henceforth National Income and Expenditure 1960), Table 48.

result of external or political factors which show, at best, only random correlation to current fiscal needs. Interest on public debt cannot be adjusted at short notice, nor, for social and political reasons, can expenditures on administration, health, and other welfare services⁽²⁷⁾. Local authority grants are usually determined in advance by two or three years. Many other services (transport, broadcasting, education, etc.) hardly lend themselves to the kind of adjustments required by effective fiscal policy.⁽²⁸⁾

Thus, on purely a priori grounds, it would appear that public expenditures offer rather less opportunity for counter-cyclical adjustments than do revenues and transfers. Moreover, with reference to public expenditures in general, it is worth repeating that any adjustments on compensatory grounds alone run the risk of interfering with the optimum balance between the public and private sectors.

Time inflexibility

Time inflexibility refers to the difficulty, even when the structural problems of fiscal adjustment can be overcome, in bringing the changes into effect quickly enough to ensure the desired effect.

Clearly, these two forms of inflexibility are not unrelated.

Programme inflexibility can usually be overcome if enough time is

(27) In fact, debt interest payments may well tend to show a perverse movement. Insofar as the government causes interest rates to rise either directly or by increased borrowing as part of a deflationary policy, the government's interest obligations, on new issues at least, may well tend to increase.

(28) The possibility of varying public consumption expenditure for fiscal purposes and the difficulties involved are discussed in the White Paper on Employment Policy, op. cit., para. 73.

available, and the causes of time delay are often the result of structural rigidities. Nevertheless, it is convenient to deal with the timing problem separately.

Prompt implementation of the prescribed fiscal correctives is imperative if the objective is to "nip in the bud" potential adverse trends rather than correct an unfavourable situation only after it has occurred. More important, tardy or untimely action (or the effects of action taken) may well make a situation worse than if no action was taken at all. There is no question that timing is of critical importance in fiscal control, but it is especially critical when that control is directed toward dynamic or cyclical fluctuations.

However, in view of the informational difficulties outlined earlier, time will usually be lost, to begin with, in recognising the need for action and in formulating an appropriate recipe for correction. In recent years the availability of detailed and up-to-date economic statistics has improved tremendously, but an information lag of only a month can be serious. (29) Time consumed in analysis,

(29) The 1944 White Paper on Employment Policy, op. cit., para. 80 to 86, recognised the serious need for more and better information.

"It is therefore vital for them (the Government) to obtain more fully and much more quickly than they have in the past, exact quantitative information about current economic movements. Without this, informed control would be impossible and the central staff, which it is proposed to set up, would be left to grope and flounder in uncertainty."

Since that time there have been a number of developments, including, for example, the preparation by the Central Statistical Office, in collaboration with the Statistics Divisions of the government departments, a Monthly Digest of Statistics (H.M.S.O.) providing statistics of income, employment, production, finance, etc. in arrears of less than three months in most cases, and Economic Trends, which gives quarterly estimates of the main components of national income and expenditure together with a commentary.

given the appropriate data, is largely a function of the expertise and size of the staff employed for that purpose. This lag, in fact, could be negative if forecasting was perfect. The time that might be lost in formulating a corrective policy suggests that plans to meet future possible contingencies should, as far as possible, be laid well in advance. Such forward planning will, of course, be more difficult for the solution of specific structural problems than for dealing with general swings in the economy as a whole.

Once the analysis and plan for correction is complete, more time will be lost in meeting political requirements regarding legislative approval for fiscal changes. This requirement varies for the form of change envisaged.⁽³⁰⁾ The level of authorization ranges from a departmental head in a local authority to full legislative consent, and the time lag involved will probably be roughly in proportion to the level of approval required.

Following Prest, the above time losses might be referred to as the 'recognition lag' and the 'administrative lag' respectively.⁽³¹⁾ There will also be an 'operational lag' involved in initiating the programme of regulation which will have to be preceded by organisation of the machinery through which action is to be taken.⁽³²⁾

(30) For an analysis of the control of public expenditures, see Ursula K. Hicks, Public Finance, Cambridge University Press, reprinted 1958, Part I.

(31) A.R. Prest, Public Finance in Theory and Practice, Weidenfeld and Nicholson, London, 1960, p. 97.

(32) In this connection, adjustments on the revenue side have an obvious advantage since, once approved, changes in rates, allowances, etc., of either sales or income taxes can be put into effect relatively quickly and without new administrative machinery.

Finally, there will almost inevitably be a lag between the initiation of the programme and the fruition of results.

In summary, changes in revenue and expenditure programmes will be time-consuming to an extent dependent upon the political requirements for approval of fiscal changes, the administrative difficulties involved in accommodating the change, and the speed with which the impact of the change makes itself felt.

"In view of the number and variety of bodies immediately concerned and the impracticability in most cases of varying the rate of work on projects already in progress, a decision to stimulate or restrain the rate of expenditure must be made in good time if it is to have a counter-cyclical effect. It may be six months until significant results begin to become apparent and the full effect may not make its impact until a year after that." (33)

The problems of inflexibility are, to a considerable extent, the result of institutional factors. In Britain economic policy as reflected in the fiscal system is the responsibility of the Chancellor of the Exchequer who presents his annual budget in April, at the beginning of the financial year, and receives final assent to his revenue and expenditure measures in subsequent legislation. The Chancellor, in drawing up his budget, relates the requests for funds from individual Ministries to the general economic situation. In this regard he relies on the advice of the Treasury, and particularly on the economic section of the Treasury which is lead by the Economic Adviser to H.M. Government.

(33) Public Investment in Great Britain, op. cit., para. 10.

The annual budget imposes a considerable rigidity on economic policy. It is only rarely, and then with political difficulty, that the Finance Act can be amended during the financial year. This advance programming, though of unquestionable value for the efficient execution of government operations, places a serious restriction on fiscal control. Moreover, the traditional formulation of the budget, in the United Kingdom at least, does not facilitate an understanding of its economic impact or the way in which adjustments might be made for fiscal purposes. (34)

(34) For these reasons, Angus Maddison suggests "It would be helpful if budgets could be rearranged to show more clearly the impact of public finance on the economy, and this in turn would make it easier to vary taxes in the course of the year rather than waiting for a fixed budget day which may not be optimal for policy changes, and which often provokes adverse speculative movements." op. cit., p. 147. In the United Kingdom the division of the budget into "above the line" and "below the line" has gradually come close to a current and a capital account. In general, those items financed by borrowing are put "below the line" though this is not necessarily the case. In practice many "capital" items, such as trunk roads and hospitals, are put "above the line" and set against current revenue; while certain current items such as the accumulated operating deficits of British Railways are placed "below the line". An alternative budget presentation distinguishing current and capital transactions was introduced by the Chancellor of the Exchequer in 1948 and was used in addition to the traditional layout until 1955, when it was abandoned. The problems associated with implementing fiscal policy through the American federal budget are discussed by Gerhard Colm, "Fiscal Policy and the Federal Budget", in Income Stabilization for a Developing Democracy, (Max F. Millikan, Editor) Yale University Press, New Haven, 1953, pp. 213-259.

Perverse effects

Directly related to the problem of timing is the possibility, already referred to, that fiscal measures may aggravate rather than alleviate an adverse trend. This possibility places a particularly important limitation on the usefulness of comparative static models for the analysis of fiscal policy. In addition to their (usual) incapability of accommodating changes in prices and interest rates, they fail to show the pattern of change through time. Certain policies can introduce instability or magnify adverse behaviour even though the final equilibrium as shown by a static analysis is satisfactory.

These perverse effects are caused by the interaction of imprecise timing and incorrect strength of corrective action. It has been demonstrated that certain types of policy not only cause cyclical fluctuations, but any attempt to speed up the process of correction by adopting a stronger policy is likely to do more harm than good by increasing the violence of the cyclical movement.⁽³⁵⁾ This danger becomes particularly evident when the time lag involved in the correction is long.

It has been estimated elsewhere that in order to reduce the variance of income fluctuations by one half (or reduce the standard

(35) See the two studies by A.H. Phillips; "Stabilization Policy in a Closed Economy", The Economic Journal, Vol. LXIV, June 1954, pp. 290-323, in which he examines the effects of lagged responses of an exponential form, and, "Stabilization Policy and the Time-Form of Lagged Responses", The Economic Journal, Vol. LCVII, June 1957, pp. 265-277, which consists of a comparison of the effects of lags of differing time-forms.

deviation by one third) the correlation coefficient between the occurrence of income fluctuations and the timing of corrective adjustments must exceed 0.7 even if the corrective is of precisely the right magnitude.⁽³⁶⁾ The possibility of time lags already referred to suggests that this degree of correlation would be difficult to achieve.

" our ignorance about lags and about the fundamental causes of business fluctuation prevents complete confidence The lag between the creation of a government deficit and its effects on the behaviour of consumers and producers could conceivably be so long and variable that the stimulating effects of the deficit were often operative only after other factors had already brought about a recovery rather than when the initial decline was in progress. Despite intuitive feelings to the contrary, I do not believe we know enough to rule out completely this possibility. If it were realized, the proposed framework could intensify rather than mitigate cyclical fluctuations; that is, long and variable lags could convert the fluctuations in the government contribution to the income stream into the equivalent of an additional random disturbance."⁽³⁷⁾

Finally, any consideration of the problem of income correction in dynamic terms must be concerned not only with the degree of correction or offset but also with the speed of reaction and the path of adjustment. There may be a choice, for example, between one corrective which will bring the level of income smoothly and gradually back to the desired equilibrium and another which

(36) Milton Friedman, "The Effects of a Full-Employment Policy on Economic Stability: A Formal Analysis" in his Essays in Positive Economics, op. cit., pp. 117-132.

(37) Milton Friedman, "A Monetary or Fiscal Framework for Economic Stability", op. cit., p. 144.

will achieve this final result more quickly but also more violently, perhaps involving unfavourable distributional effects. The faster correction may also tend to aggravate the dislocations resulting from cyclical behaviour. There is no simple choice among the various complex alternatives that may be available, each having a different time path and speed of reaction. Such choices depend largely on individual tastes and preferences.

It may therefore be concluded that far from the frequent assumption that almost any action is better than none, measures of inappropriate form, magnitude, or timing run a strong risk of increasing rather than off-setting fluctuations and their undesirable effects.

3. Problems of Distortion

In addition to the technical and political problems outlined above concerning the recognition of the need for fiscal controls and their formulation and imposition, adjustments in the public sector have wider implications for the economy as a whole which must be recognised. Because stability is only one of a number of objectives of public finance, its pursuit must be viewed in the full light of any disturbances that may result to the other budgetary objectives and to the private sector. These disturbances, which vary for different fiscal measures, are the result of induced alterations in the scope of public activity, the distributional impact of changes in taxes and benefits, distortions in the balance between alternative costs and prices, and the creation of illusions

of various kinds. Such effects are virtually inevitable and their manifestation involves the whole subject of "neutrality" of compensatory finance. This is not the place to examine the problem of neutrality in any detail, but a review of the considerations involved is a necessary inclusion in any discussion of the implications of fiscal adjustments.

The impact of alternative adjustments

Fiscal controls are by definition designed to influence the level of economic activity, though some measures have a more potent impact than others. For convenience in discussing the impact of different policies, fiscal adjustments can be grouped into three broad categories. Firstly, it will be convenient to deal with the adjustment of public expenditures, assuming that revenues remain unchanged. Conversely, public expenditures may be assumed constant, while revenues are altered.⁽³⁸⁾ Finally, both revenues and expenditures can be considered to be adjusted equally in the same direction. These three categories will be referred to as expenditure adjustments, revenue adjustments, and balanced adjustments respectively. For the time being, the effects of fiscal measures on liquidity and the structure of claims will be ignored.⁽³⁹⁾

Spending adjustments (revenues remaining fixed) can be expected

(38) This proposition immediately begs the question as to whether expenditures are to be maintained in real or in money terms. For a discussion of this question, see Richard A. Musgrave, op. cit., pp. 211-213.

(39) This aspect of fiscal policy is examined in detail by Richard A. Musgrave, op. cit., Chapter 22.

to have the greatest impact on the economy as a whole. Any increase in government spending on goods and services or on investment will increase aggregate expenditure not only by the amount of the public outlay but also by the rounds of re-spending initiated (through the "multiplier" process) by the increased expenditure. Apart from any effects on incentives and income distribution, there will be no off-setting reduction in private spending since tax revenues are left unchanged. In practice, however, private spending may be reduced if the new public activity competes with private enterprise, if the deficit spending creates a suspicion of economic insecurity, or if the necessary increase in public debt raises interest rates enough to discourage private borrowing.

Revenue reduction will have only an indirect effect on the level of demand through increasing private disposable incomes, and (providing the marginal propensity to consume is positive) thereby increasing private spending. A reduction of taxes will affect total spending less than an equal expansion of government spending because in the former case the "multiplier" will be less by one.

Thus if $1 - mpc > 0$, then spending expansion (G) will increase total income (Y) by an amount equal to the value of the multiplier (k) multiplied by the increase in public spending:

$$\text{i.e.: } Y = k G$$

An equal money reduction in tax revenues (T) will have an impact which will be less by an amount equal to the amount of the tax reduction:

$$\text{i.e.: } Y = (k - 1) T$$

Thus, if $T = G$, the effect on Y in the former case is greater by the amount of G (or T).

Balanced adjustments will have still less impact on the level of total spending since the increase in public expenditures will be off-set to some extent by the equal reduction in private disposable incomes. The increase in total expenditure will result from the public spending of funds which, if left in private hands, would be partially saved.⁽⁴⁰⁾ Using the earlier notations, the effect of a balanced increase can be summarized as the difference between the increase caused by the public outlay and the decrease resulting from the higher taxes.

$$Y = k \Delta G - (k - 1) \Delta T$$

But: $G = T$, so

$$\begin{aligned} Y &= k \Delta G - (k - 1) \Delta G \\ &= \Delta G \end{aligned}$$

The net increase in income is thus equal only to the amount of the original increase in public spending.

If the increase in government outlay was not on goods and services, but took the form of an expansion of income transfers, the impact would be considerably reduced. In this case (as in the case of revenue reduction), the stimulus would be entirely indirect since the direct impact of the outlay on spending would be eliminated:

$$\text{i.e.: } Y = (k - 1) \Delta G$$

(40) This important consideration is sometimes overlooked: for example, Clarence Heer, in his "Stabilizing State and Local Finance", in Policies to Combat Depression, p. 178, suggests that in the case of taxes being raised to finance an equivalent expansion of expenditures ".... the effect of a tax increase on aggregate demand is apparently neutral."

As a result, in the balanced expansion case, the net effect would be eliminated altogether, since:

$$Y = (k - 1) G - (k - 1) T$$

But since:

$$G = T,$$

$$Y = 0$$

Thus, in the short run, and under the simplifying assumptions referred to earlier, spending adjustments will have the greatest effect and balanced adjustments the least.⁽⁴¹⁾

For revenue changes, the impact on spending of alternative tax adjustments involves the problem referred to by Kaldor as the "economic efficiency" of tax measures.⁽⁴²⁾ Tax efficiency refers to the expenditure-restraining effects of taxes; the more a tax is paid out of potential savings, the less restraint it imposes on spending, and hence the lower its efficiency. Thus, given two tax alternatives of differing efficiencies, one will have to withdraw greater money revenue than the other in order to produce the same restriction of demand. If the object of the tax is to release resources, it is by no means a matter of indifference which alternative is chosen. Clearly, as long as the marginal utility of money is

(41) These are admittedly highly simplified representations and are meant for illustrative comparison only. Much more elaborate results are obtained if various forms of taxation and transfers, and their differing multipliers, are considered. For more complicated analyses see Richard A. Musgrave, The Theory of Public Finance, op. cit., Part Four.

(42) Nicholas Kaldor, An Expenditure Tax, George Allen and Unwin Ltd., London, pp. 173-175.

positive, the tax which reduces consumer's income or wealth the least will be preferable.⁽⁴³⁾ Since either tax would, by definition, have the same effect on demand and prices, the higher money balances remaining after the more efficient tax, represent higher real balances as well.⁽⁴⁴⁾

Regardless of the form of corrective measure, the inevitable conflict between the objectives of full use of resources and stable prices is encountered as full employment is approached. Because of the rigidities referred to in the first chapter, fiscal policy in inflationary circumstances can succeed in stabilizing prices only if demand is reduced enough to cause output to fall below the full capabilities of productive capacity. The pursuit of stable prices therefore loses much of its appeal when it begins to adversely affect the level of employment.

Although the degree of slack required to prevent pressure on prices may not be so great as to leave a very large total unemployment level, the unemployment is not likely to be evenly distributed. Contractionary fiscal policy is likely to press particularly heavily on those industries for which demand is stable or declining and such an effect will be especially important if these industries are

(43) For the same reasons, if the purposes of an excise tax is to release specific resources, it will have greater efficiency (because it will have both income and substitution effects) than a "non-discriminatory" tax heavy enough to give the same result.

(44) See A. Morag, "Is the 'Economic Efficiency' of Taxation Important?", The Economic Journal, Vol. LXIX, March 1959, pp. 87-94.

regionally distributed. In such cases the frequent argument that the neutrality of fiscal controls makes them preferable to monetary measures is to some extent weakened. Regional unemployment, for example, suggests a need for a rather different form of corrective, such as regionally specific public works or inducements to private activity.

Finally, it should be emphasized that even if fiscal policy concentrates on consumption rather than investment expenditure, this does not mean that the rate of economic growth is unaffected. Net investment results largely from the prospect of sales expansion in the face of pressure on existing capacity. If fiscal policy succeeds in reducing demand to the extent of removing this pressure, the inducement to invest will be removed. Lower investment will, of course, reinforce the initial fiscal measures. But if the desired rate of investment is that which is associated with full capacity employment, this means that price stability can be achieved only at the price of slower economic growth.

Income redistribution

The distributional effects of fiscal adjustments present an exceedingly difficult challenge for economic analysis. The basic problem lies in defining a basis on which the effect of a particular budget change can be demonstrated. For lack of a better method, the problem can be approached by assuming that the imposition of any given fiscal measure is accompanied by an equal but opposite change in some other hypothetical measure which is distributionally neutral. Such a method is far from ideal, since it is unlikely that there is any such thing as a distributionally neutral fiscal adjustment. In

fact, the present size and distribution of income is itself clearly influenced by distributionally biased budget policies in the past. Nevertheless, this procedure provides a useful means of demonstrating the distributional implications of revenue and expenditure adjustments. Needless to say, it does not at the same time show the distributional effects of the fluctuations in the economy that the adjustments are designed to offset.

The many complications involved in tracing the impact of budget adjustments on income distribution are beyond the scope of this study, but it must be pointed out that the problem involves much more than the extent to which a tax is passed forward or backward. The ultimate distributional effects can be defined only in terms of induced changes in the relative prices of various products and factors. Thus the extent to which any group gains from the distributional effects of an adjustment depends not only on the effects on its money earnings, but also on changes in the prices of the goods which that group buys. These effects are demonstrable only in terms relative to other groups.

The tax system, indeed, is usually designed with the express purpose of affecting the distribution of income. The impact of an income tax, for example, directly affects distribution by influencing factor earnings. But the effects go further than this. The full distributional impact must take account not only of relative reductions in income but also of the effects on the amount of work done or other resources supplied. To ignore this latter consideration would be to assume that all factors are in perfectly inelastic supply.

Further, as will be seen later, these induced changes in resource supply will have repercussions on the prices of products. Imperfections in the coverage of the tax system, and in particular the way in which it treats income from different sources differently, will exaggerate these distortions in resource supply.

The frequent assumption that indirect taxes cause product prices to increase by an equal amount and hence fall on consumers of those products, becomes untenable under this analysis. That assumption not only subsumes the perfect inelasticity of consumer demand for those products but also totally ignores the income effects of the tax on consumers of those goods. If a tax causes an increase in commodity prices, both income effects and substitution effects will alter patterns of consumption and hence also the real incomes of consumers. The way in which consumption is affected will in turn influence the returns to factors employed in industries which suffer or benefit from the change.

Finally, the form in which the resources are supplied may be affected by fiscal changes. Certain adjustments may not only induce workers to work more but also make them willing to take less pleasant work. Again, though this is not strictly an induced reaction, an improvement in the incomes of poor groups may permit them to enjoy a higher level of welfare and thereby improve the quality of their effort. It will be necessary to return to these effects, as well as the effects on investment decisions, in the discussion of incentive effects.

Incentives and resource supply

In the preceding discussion of revenue changes little distinction was made between the effects of different types of taxes.

These differences become important for the implications of fiscal adjustments for incentives and the supply of productive factors. This aspect of fiscal changes involves the whole of the theory of incidence. It is not the present purpose to attempt to deal with the problems of incidence in any detail, yet a brief summary of the main considerations involved seems necessary to show up the distortion effects of fiscal measures.⁽⁴⁵⁾

The important incentive effects of tax changes result from two primary considerations. First there are the distributional features of the change already mentioned, and which will be referred to in the following paragraphs as income effects. Of a rather different nature are substitution effects which are induced when the marginal tax rate is greater than or (in the case of benefits) less than zero.⁽⁴⁶⁾

A poll tax, as distinct from a proportional or progressive income tax of equal yield, leaves no opportunity for varying one's liability by altering the amount of work done. Furthermore, it leaves unchanged the cost of leisure in terms of sacrifice of earnings.⁽⁴⁷⁾ Since, therefore, the imposition of a flat levy has

(45) The problems of incidence occupy a prominent place in most of the standard works on public finance. Particularly relevant to the present discussion are Richard A. Musgrave, op. cit., Part 3; Earl R. Rolph, The Theory of Fiscal Economics, University of California Press, Berkeley, 1954, Chapters 10-12; and Bent Hansen, op. cit., Part 3.

(46) These effects, which follow from a change in the costs of alternative behaviour patterns, are what A.C. Pigou refers to as 'announcement effects'. A Study in Public Finance, Macmillan & Co. Ltd., London, 1947, pp. 55-56.

(47) With minor qualifications, property rates and death duties fall into this category as well. Incidentally, the recently modified National Insurance contributions in Britain constitute a poll tax on employed persons.

no effect on the rate of substitution between work and leisure, the result can be interpreted entirely in terms of income effects, and therefore any revenue increase by this means will tend to stimulate the supply of labour.⁽⁴⁸⁾

On the other hand, a proportional tax on earnings leaves one free to modify his tax liability through offering more or less work. Further, such a tax lowers the marginal cost of leisure in terms of earnings foregone, and this will encourage the substitution of more leisure for less work.⁽⁴⁹⁾ The income effect will work in the opposite direction. The net effect on the amount of work offered will depend upon the relative strength of the income and substitution effects and it is difficult to say which will be the greater. The balance probably varies according to the pre-existing level of tax, the absolute and relative level of the individual's income, and other factors too numerous and perhaps too tenuous to investigate here.

A proportional tax embodies an identity between the average and marginal rates of tax on successive slices of income. In contrast to this, the usual form of progressive tax provides for a marginal rate which increases as the level of income increases. The average rate increases as well, though at a slower rate. Because it therefore causes a progressive fall in the cost of leisure, any revenue increase through a progressive tax on earnings will produce stronger substitution effects than in the case of a

(48) Cf. A.C. Pigou, ibid., pp. 64-65.

(49) This subsumes a declining marginal utility of income.

proportional tax, and the incentive to reduce work effort will be to that extent greater. (50)

These effects of marginal tax rates in reducing the returns from effort and thereby encouraging leisure, are not limited to income taxes. A similar influence is to be expected with sales and excise taxes. The implications of a revenue increase through a tax on commodities are more complicated, however, because the result depends upon the way the tax is distributed among commodities and in particular with reference to the complementarity of the taxed goods with present and future leisure. All that can be reliably stated here is that in comparison with a proportional income tax, a tax of equal yield levied on commodities will discourage work effort more if the goods taxed are complementary to leisure.

The effect of various forms of revenue changes on the level of saving can also be summarized in terms of income and substitution effects. (51) All taxes have an income effect insofar as the taxpayer's ability to both save and consume is reduced. (52) The weight of this effect depends upon the average rate of tax. A substitution effect on the consumption-savings balance will be felt only with certain taxes which discriminate against the postponing of consumption, such as taxes on savings and interest. The

(50) For an analysis of these conclusions, see Earl R. Rolph, op. cit., Chapter 10.

(51) For a detailed discussion of these points, see Richard A. Musgrave, op. cit., Chapters 12 and 14.

(52) Different taxes will, of course, affect the composition of consumption as well, and savings adjustments to tax changes will depend upon individual's motives for saving. The above remarks are restricted to generalizations about the probable reactions of savers as a whole.

impact of the substitution effect in these cases will depend upon the marginal tax rate.

Although an income effect will result from any revenue change, its importance will vary depending upon the groups affected. In the earlier discussion of tax efficiency, it was argued that insofar as the marginal propensity to save increases toward the upper end of the income scale, a tax levied on high income groups will decrease savings more than one of equal yield on low income groups. Thus a progressive tax on income will affect savings more than a proportional tax, and a tax on luxuries more than a tax on necessities. Similarly an increasing marginal propensity to save suggests that a proportional income tax will off-set savings more than an equal tax on commodities, even if the latter was distributed proportionally as well (a general tax on commodities is regressive in terms of income). Finally, if investment income increases as a fraction of total personal incomes toward the higher income brackets, a tax on "unearned" income will discourage savings more than one on wages and salaries.

A substitution effect will reinforce the income effect in the case of taxes that discriminate in favour of present consumption. There will, however, be no such influence with a general tax on consumption or on income excluding interest. The substitution effect, where it occurs (i.e. with taxes on saving and interest), will be strengthened by any element of progression in the tax schedule, since progression implies a marginal tax rate which is above and rising faster than the average rate.

Finally, some generalizations can be made regarding the effect of tax changes on investment decisions. Much depends on whether a tax on business profits affects product prices. Insofar as prices change as a result of the tax, the reactions associated with consumption taxes will be involved. If the tax can be considered primarily to affect the level of net profits, it can be expected to influence the level of investment and the riskiness of investment undertakings.

A tax which reduces profits will affect the disposable income generated by a given output and will modify expected rates of net profit. This will affect the availability of funds from business saving and hence, to the extent that firms depend upon internal financing for investment, such taxes will alter the supply of investable funds. The relative balance between the tax rates applicable to undistributed and distributed profits (or undistributed profits and investment receipts of dividend receivers) will clearly influence the extent to which business profits are retained, but, in addition, the actual level of tax on retained earnings of businesses will determine the amount of funds available for self-financing of investment. (53)

Given the supply of investable funds, the incentive effects can again be interpreted in terms of income and substitution effects. A proportional tax on business profits will, if losses are fully off-set, create an income effect only. If losses are not fully provided for, substitution effects arise since the government shares

(53) The liquidity effects on investment is an important reason why private saving does not have the same fiscal effects as public saving of tax revenues.

the profits but not (all) losses and hence the private profitability of risk-taking falls. In any case, the effect of the tax is to reduce the net yield to the investor, and where losses are off-set, his risk is reduced as well.

The income effect will encourage the investor to attempt to recoup at least part of his loss in yield. This may be done by either increasing the riskiness of his investments, and hence their yield, or by expanding the size of his investments. Both risk-taking and investment is therefore encouraged. Where losses cannot be off-set, however, the substitution effect serves to discourage risk-taking since the relative appeal of risky investments falls. In this case, the net result on the riskiness of investments is indeterminate, depending upon the relative strengths of the two effects.

Any progressivity in the tax structure will strengthen the substitution effect since profits will be reduced by a higher rate than losses. Risky investment will to that extent be discouraged.

The tax system can influence the level of business saving not only through the actual and relative rates on distributed and retained earnings but also by adjusting the allowances which can be set against earnings as expenses. This is to say, the tax effects depend upon the way that taxable income is defined, and this is particularly important in connection with allowances for depreciation and the method of evaluating inventories.⁽⁵⁴⁾

In summary, if losses are completely off-set against profits,

(54) These considerations are discussed further in Chapter III in connection with the British tax system.

a tax encourages investors to invest more and in more risky undertakings (though the risk to themselves may be no greater). Substitution effects arise to counter this influence where losses cannot be completely off-set or where progression in the tax structure means that losses are treated on a different basis than profits. Perhaps most important of all, in periods of prosperity at least, a tax on business earnings (and particularly savings) reduces an important source of investable funds and hence restricts the capacity to invest.

Spending adjustments, by and large, have effects which are the reverse of comparable changes on the tax side. Transfers of a fixed amount are similar to poll taxes in producing no substitution effect, though the income effect will be opposite. Such transfers, which are common in the form of pensions and other benefits, will therefore tend to discourage work effort. Similarly, the effect of a transfer which is proportionally related to income, will be opposite to that of a proportional income tax; the income effect being a discouragement and the substitution effect an encouragement to work offered. If progression is built into the transfer schedule, so that the marginal transfer rate falls as income rises, the substitution effect loses importance as income increases. If the marginal transfer rate becomes negative, then the substitution as well as the income effect will discourage work. (55)

Public spending on goods and services will have an effect on incentives to work depending upon the complementarity of the public

(55) For a more detailed discussion of these conclusions, see Richard A. Musgrave, op. cit.



services or free goods to work and leisure. Expenditures on health and education facilities, if these increase productivity and real wages, will lead to an income effect which is adverse, and a substitution effect which is favourable to work. The extent to which public goods compete with private production will discourage effort and any complementarity between these goods and work will increase effort.

The supply of savings will be affected by the way in which public spending discriminates in favour of future or present consumption. Transfers in the form of health and old age benefits reduce the need for saving and hence produce a bias in favour of consumption. Again, the effect on saving of public provision of goods and services will depend upon the complementarity of these goods to present or future consumption.

Finally, subsidies to business will have analagous but reverse effects to business taxation. A subsidy on business profits which does not also increase business losses encourages risk-taking and promotes investment. The effect of public purchases will depend upon their complementarity to private business. The provision of social capital, for example, will encourage, and of competitive enterprises will discourage, private investment.

Public costs and the social balance

Mention has already been made of the possibility of conflict between the pursuit of economic stability and other public objectives. (56)

(56) The importance of adequate consideration to other objectives of economic policy and to the institutional difficulties involved are emphasized by Max F. Millikan, "Objectives for Economic Policy in a Democracy", in Income Stabilization for a Developing Democracy, (Max F. Millikan, Editor), New Haven, Yale University Press, 1953, pp. 12-75.

These other aims, which may demand equal or even greater priority, include an equitable distribution of income, a high rate of growth, striking the proper balance between the several levels of public authorities, and preventing undesirable fluctuations in the balance of payments. The relative importance of these aims depends, to a greater or lesser extent, on political and social opinion. Further important considerations concern the proper allocation of resources between the public and private sectors of the economy.

When fiscal policy results in a budget deficit, the cost of public activity is understated in terms of public revenues. Similarly, a budget surplus superficially distorts public costs upward. If the community as a whole arrives at an optimum level of public services by balancing the benefits against their cost in terms of taxes, this distortion of the sacrifice involved may lead to an unwarranted expansion or contraction of the activities of the public sector. On the other hand, if the cost was always accurately reflected (as with a consistently balanced budget) and assuming the income elasticity of demand for public services is positive, the demand for public services would vary in a way which, if satisfied, would aggravate business cycles.

Theoretically, at least, it can be argued that the activity of the public sector should be determined in terms of the optimum for the community in full employment equilibrium, and this level should not be altered in response to business fluctuations. This suggests that although spending changes can be shown to have the most potent effect on demand, fiscal measures should rather take the form of tax and transfer adjustments. This is to say that the allocation

function of governments should be dealt with in a context of a full employment level of resource utilization, and although income correction can be made through spending changes, more can be accomplished (i.e. distortion can be avoided) if reliance is placed instead on revenue and transfer changes.

This generalization becomes invalid only if the level of public services is not optimal to begin with or if special public activities are required to prevent short-run distortions. Perhaps more important, changes in public works may be the only practicable course if the dislocations are of a regional nature.

Economic growth

The effects of various forms of fiscal policy on the long run rate of growth of the economy are exceedingly complex, and no more than a general statement of the problem is attempted here. It is important to recognise, however, that once the prospect of economic growth is introduced, the problem of stabilization becomes one of maintaining full employment and price stability not at a given equilibrium level of output but on a moving equilibrium growth path. Moreover, the growth path itself may well be influenced by the stabilization policy. (57)

Clearly, the effects of fiscal adjustments outlined in the preceding pages will indirectly influence the rate of growth as well. Any prediction of the ultimate effect on the growth pattern will depend to a very large extent upon the weights attributed to the different forces at work and the simplifications and assumptions

(57) See Bent Hansen, op. cit., Chapter XVI and Richard A. Musgrave, op. cit., pp. 517-525.

made about the way in which fiscal changes react on income distribution, incentives, investment decisions, and so on.

Fiscal measures designed to off-set fluctuations around the growth trend do not differ in principle from the control of fluctuations in a static setting. On the other hand, the effect of fiscal policies on the rate of growth of output itself involves complicated considerations of incidence changes through time.⁽⁵⁸⁾ There are, to begin with, the problems mentioned earlier regarding the possible divergence between the levels of output at which labour and capacity become fully employed. This possibility takes on greater significance when the rates of growth of employable labour and useable capacity have to be reconciled. In addition, all the incidence effects which influence the supply of resources take on a new importance for the long run, particularly those effects which alter the distribution of income.

Finally, the impact of public transactions on the long run balance between demand and output is more complicated, and extremely difficult to predict with any degree of precision.⁽⁵⁹⁾ Again, any estimate will depend heavily on the assumptions made about the nature

(58) See Douglas Dosser, "Tax incidence and growth", The Economic Journal, Vol. LXXI, No. 283, September 1961, pp. 572-591, for a statement of the complications that arise over incidence in a growth context, and Richard A. Musgrave, op. cit., Chapter 20, for examples of how some incidence effects can be incorporated in growth models.

(59) For an examination of the variables and relationships involved, see A.T. Peacock, "The Public Sector and the Theory of Economic Growth", Scottish Journal of Political Economy, Vol. II, February 1959, and Richard A. Musgrave, op. cit., Chapter 20.

of the economy and its reactions to fiscal changes.

In this connection, the ways in which the budget affects the distribution of public and private spending between consumption and investment is especially relevant. An encouragement to investment at the expense of consumption may well increase the rate of capacity growth. The effect on demand, however, is less clear and the problem becomes one of reconciling the "required" and "actual" rates of growth.

4. Implications for Automaticity

In view of the above general remarks concerning fiscal adjustments it is possible to draw some conclusions about the special implications of automatic as distinct from discretionary fiscal controls. Before proceeding in the next chapter to a detailed analysis of the nature of automatic controls in the economic structure of the United Kingdom, it will be useful to outline the ways in which these devices require a modification of the implications of fiscal measures discussed on the preceding pages.

The fiscal authority is usually considered to be responsible for initiating the kinds of fiscal correctives implied above, and indeed an overwhelming share of the literature on compensatory public finance deals with discretionary forms of fiscal control. To some extent, however, the required adjustments are brought about automatically through the action of so-called built-in stabilizers.

A built-in stabilizer can be defined as any mechanism which, without discretionary interference, will tend automatically to bring

about counter-cyclical adjustments in total income.⁽⁶⁰⁾ These automatic adjustments may occur on either the revenue or expenditure sides of the budget and can be attributed to two distinct forces. Firstly, they may be caused by an expansion or contraction in the size of the tax or expenditure base. Thus, during a depression, it is reasonable to expect a contraction in the base of an indirect tax levied on goods with a high income elasticity of demand, and a widening of base for unemployment benefit payments. Conversely, during an inflation with rising income and employment, the tax base will tend to expand and the unemployment benefit base contract. Thus, even if the respective rates of tax and benefits remain fixed, the adjustments in their bases will tend to create appropriate counter-cyclical adjustments in the budget.⁽⁶¹⁾

Secondly, given the tax or payments base, an appropriate adjustment may occur in tax or benefit rates. In the case of a progressive tax on incomes, for example, it is to be expected that an increase in average incomes during inflation will cause not only an increase in the tax base (taxable income) but also an increase in the average (as well as the marginal) rate of tax as incomes fall into higher

(60) There will be occasion later to refer to certain automatic de-stabilizing pressures, infra. p. 101.

(61) "Formula flexibility" or the advance provision for stabilizing measures to be implemented if certain indicators exceed fixed limits, is not dealt with here since prescribed adjustments cannot be considered automatic. The proposal that national insurance contributions should be made to vary in response to movements in the unemployment rate is of this type. See the 1944 White Paper on Employment Policy, op. cit., para. 68 et seq. This form of control is discussed by Richard A. Musgrave, op. cit., pp. 512-515.

rate brackets. On the expenditure side, a system of price guarantees for agricultural products would result in an increase in rates payable as prices decline. The automatic fiscal effects of these institutional provisions, it is probably safe to say, are entirely fortuitous, but this does not detract in any way from the need for an understanding of their economic impact.

Apart from the economic implications of automatic controls as distinct from discretionary measures, are important politico-legal considerations. Any discretionary adjustments require the exercise of political prerogative over the functions of the public purse. Automatic adjustments, by definition, operate passively as a result of pre-existing statutory provisions. Thus judgement can be passed about the relative superiority of automatic over discrete controls on the basis of one's convictions regarding the limits to the legitimate mandate of the government. This problem, an interesting one in itself, is not of direct concern in this present context and, having been mentioned, will not be investigated further. (62)

The likelihood of fiscal measures conflicting with other budgetary aims and with the activities of the private sector has been emphasized. Automatic adjustments are unlikely to be entirely neutral in this respect, but since they involve no policy changes in the budgetary system, and since the predictability of their action removes a good deal of uncertainty, they are less likely to interfere with other budgetary aims, private activities, and expectations than discrete fiscal changes.

(62) For a discussion of this problem, see Samuel H. Beer, op. cit., Chapter IV.

Clearly, the problems of recognition of adverse economic movements and analysis of trends are irrelevant for automatic controls. The thermostatic movements of built-in devices will be activated by the manifestation of the need itself and will operate regardless of the nature (dynamic or static) of the fluctuation. With regard to the problems associated with initiating corrective action, automatic controls have a similar advantage. The programme inflexibilities which hinder discretionary measures are obviously entirely avoided when the provisions for adjustments are built into the system.

Time inflexibilities may also be expected to be less serious. Since the problems of recognition and analysis are circumvented, the recognition lag is removed altogether. The administrative lag is likewise eliminated. Since the automatic adjustments take place as a result of already existing statutory provisions, no new authority is required. Moreover, insofar as no new machinery or administrative organization is needed, the operational lag involved in initiating the controls disappears. Undoubtedly, one of the unique values of automatic control arises from its avoidance of the difficulties of introducing new control measures in a short time.

The significance of the final lag, that between the initiation of the corrective and the fruition of results, is less clear. The duration of this lag depends largely on the nature of the adjustment.

For a given adjustment, the time between the change in tax or expenditure and its impact on the economy will not likely be affected

by whether the change is automatic or otherwise. Therefore the problem becomes one of whether the automatic devices are of a type which can be expected to react quickly. But even if this final lag is no shorter for automatic controls (and, as will be seen in the next section, there is a strong probability that it will be shorter) there are nevertheless good a priori grounds for expecting the total time lag involved to be shorter than for discretionary changes.

As far as the distortive aspects of fiscal controls are concerned, there is unlikely to be any great difference whether the adjustments are automatic or discretionary. A given automatic adjustment will have the same impact on induced demand, income distribution, and apparent public costs as a discrete change of the same form and strength. Nevertheless, one would intuitively expect a different subjective reaction to automatic changes, particularly in connection with their effect on incentives. Since these adjustments are built into the system and involve no budgetary changes, the reaction of consumers and investors may well be less marked, especially in the short run. This would be most likely in connection with the behavioural changes resulting from substitution effects brought about by an alteration in the terms of alternative choices, such as between work and leisure. Thus the more subtle adjustments of automatic devices are likely to result in more moderate reactions, although the extent of this difference must remain high conjectural.

Changes induced in the balance between the public and private sectors will be similar to those resulting from discrete changes;

but here again the earlier conclusions require modification. Built-in reactions, although they involve similar adjustments in the public sector's share and control of resources, do not, by definition, involve any change in the function of the state or the scope of its responsibilities. The avoidance of any interference with the role of the public sector, in addition to its political significance, will reduce uncertainty in the private sector about the government's fiscal activities. Indeed, insofar as these regulators can be depended upon to dampen the amplitude of business cycles, their effects will be cumulative, since more gentle fluctuations tend to reduce the incentives to business men to behave in a manner which aggravates cycles, and may even encourage them to act in a counter-cyclical manner. Such an effect would result, of course, only if the controls were largely successful.

The probable reduction in total time lags associated with automatic changes would lessen the likelihood of perverse effects by increasing the correlation between the adverse movement in income and the off-setting movement of the corrective. Moreover, the fact that these controls are automatically initiated by the occurrence of a fluctuation, means that they will take effect gradually as the adverse situation materializes, usually increasing in strength the more adverse the situation becomes. This suggests that not only are they unlikely to exert too heavy an impact, but also that the more gradual corrective pressure will minimize the dislocations of adjustments.

It may be argued, however, that this feature is not entirely advantageous. Their sensitivity to income changes means that these

devices moderate the impact of their own corrective force, and as a result delay the return to "normal". Thus in a recession, for example, after the automatic devices have operated to lighten tax payments and expand government expenditures, the return to normal would be hastened if the stabilizers remained inoperative until recovery was complete, rather than exerting their dampening effect on the increasing income and expenditure.

In this respect an understanding of the strength of automatic stabilizers is vitally important for the formulation of discretionary policy. Clearly, in inflation it will be necessary to increase tax rates and change expenditure policies less if automatic regulators are at work. Similarly, more moderate action will be in order during a depression.

In the light of the above discussion it may be concluded that in addition to the political considerations concerning the discretionary power of governments, automatic adjustments have important advantages of a technical nature, in the short run, at least. They avoid the structural rigidities of the adjustment process and much of the time loss associated with discrete changes. They probably also avoid many of the reactions associated with uncertainty about government action and some of the behavioural adjustments of consumers and investors. For these reasons their effects are less likely to become perverse and more likely to mitigate adverse economic fluctuations. Nevertheless, these advantages will weigh in favour of automatic regulators only insofar as they can exert a significant impact on the economic system.

CHAPTER III

AUTOMATIC FISCAL DEVICES IN THE UNITED KINGDOM

"The ideal to be aimed at is some corrective influence which would come into play automatically - on the analogy of a thermostatic control - in accordance with rules determined in advance and well understood by the public."

(1944 White Paper on Employment Policy)

By and large, the government specifies only the rates of tax liability and benefit payments. Tax yields and money payments - and hence the budget balance - therefore vary in response to changes in the tax (or payments) base which occur as a result of movements in the economy. It is these fluctuations which create the automatic budgetary offsets to economic swings. The growth of the public sector and the consequent increase in rates and coverage of taxes and payments has strengthened these automatic fiscal reactions and hence given rise to the need to examine and quantify their fiscal impact.

Before proceeding to the discussion of flexibility, however, it should be noted that the size of the government budget is itself an important determinant of the public sector's contribution to stability.

Apart from any imbalance between the two sides of the budget, the public sector represents a part of the total economy that is to some extent immune from the vicissitudes that cause fluctuations in

the private sector. Public investment expenditure, which now forms a large share of total capital formation, is not sensitive to the shifts in business expectations which is a principal cause of irregularities in the rate of private investment. Similarly, for a variety of reasons discussed in the last chapter, the real rate of public consumption expenditure is fairly fixed, in the short run at least. Partly because of this, the labour force of the public sector is virtually immune to the risk of cyclical unemployment. Thus even if revenues and expenditures are not deliberately manipulated to off-set fluctuations, the inherent stability of public spending provides a stable core of demand which limits the scope for overall fluctuations. It follows that the larger the public share of total spending the more stable will be the total demand on the economy.

In 1959, the share of the public sector's total expenditure in the United Kingdom's gross national product was almost double the pre-war level.⁽⁶³⁾ There has been a particularly sharp increase in public current expenditure in the form of transfers. Current grants to persons have increased by one-half over their pre-war level.⁽⁶⁴⁾

(63) The increase was from 19.73 per cent in 1938 to 32.73 per cent in 1959. Calculated from National Income and Expenditure 1956 and 1960, Tables 1 and 4.

(64) In 1938, national insurance benefits and other current grants to persons (i.e. national assistance, family allowances, war pensions, scholarships and grants to non-profit-making bodies serving persons) amounted to 4.83 per cent of gross national product; in 1959 this figure had increased to 7.38 per cent. Ibid. These figures exclude expenditure on subsidies and debt interest.

These transfers, which consist mainly of retirement pensions, sickness, injury, maternity, and widows' benefits, and unemployment payments serve to directly stabilize the disposable income of the beneficiaries.

The growth in government spending has been paralleled by an expansion in the public share of national income. Thus, by and large, tax rates are higher, and their coverage greater than in 1938.

In the present discussion, however, the primary concern is with budgetary changes which are automatically induced by changes in economic activity. For the present the discussion will be concerned with those flexible devices which tend to have a stabilizing effect in the context of a static economy, though it will generally apply as well to a dynamic economy in the short run. Any device, therefore, which tends automatically to increase public revenues or decrease expenditures in periods of inflationary pressure or reduce revenues or increase expenditure in periods of depression, will be of relevance. (65)

The stabilizing effect of an automatic fiscal device must be evaluated not only in terms of the extent to which the tax or payment base and rate change in sympathy with a changing level of income, but

(65) Cary Brown defined automatic stabilizers as devices which exert pressure to bring the economy back to equilibrium; "The Static Theory of Automatic Fiscal Stabilization", Journal of Political Economy, Vol. 63, No. 5, October 1955, pp. 427-440. This is a much narrower definition than that adopted here, which includes any device which dampens down the amplitude of a fluctuation.

also in terms of the size of the particular device in relation to the economy. Thus, a small proportionate change in the yield of an important source of revenue such as the income tax will have a greater stabilizing effect than a proportionately larger change in an insignificant tax whose yield is much more sensitive to income changes. The size of a particular device will depend upon the tax (or payment) base and the average rate of tax (or payment) on that base.

Furthermore, as discussed earlier, the speed with which any device responds to an income change is of critical importance for its stabilizing effect. Indeed, "Automatic machinery is not usually thought superior to manual methods if it operates at a much slower speed, and fiscal policy is no exception." (66) It is therefore in terms of these two major considerations of size and speed of operation that the efficiency of any built-in stabilizer must be judged.

1. Revenue Adjustments: Income tax on persons

Approximately one quarter of the central government's total receipts from taxes (including national insurance and health contributions) is derived from the income tax paid out of personal income. (67) In fact, the income tax as such is more important

(66) A.R. Prest, op. cit., p. 97.

(67) In 1959, 25.33 per cent of total tax receipts arose out of the income tax on personal incomes. Calculated from National Income and Expenditure 1960, Tables 2 and 35 (for the purposes of this discussion, the term "total receipts from taxation" includes national insurance and health contributions; total receipts from taxation comprised 92.76 per cent of the total revenue account of the central government in 1959, Ibid.)

than this, since it applies to companies as well as persons, but it will be convenient to examine its impact on corporate income separately. That part of the income tax paid by persons is in itself the largest single source of revenue for the central government, and hence rates highest of the fiscal weapons in terms of size.

A priori, there is good reason to expect the tax on individual incomes to show counter-cyclical flexibility both of the tax base and of the effective tax rate. The tax code consists of a standard rate of tax with a variety of personal allowances for family and other responsibilities and reduced tax rates on lower incomes. Thus the tax is progressive between the exemption limit and the standard rate bracket.⁽⁶⁸⁾ As total incomes increase during an inflationary period more incomes will rise above the exemption limit and become taxable. Thus the tax base will expand, showing a positive tax base flexibility. Furthermore, as income increase and fall into higher rate brackets, the average rate of tax will tend to increase, showing a positive rate flexibility.

These conclusions, however, assume no change in relative distribution of taxable income. If this assumption is removed it

(68) It may be argued that the tax is progressive throughout; the exempted incomes falling into the zero rate bracket and high incomes falling into a very broad top bracket chargeable at the standard rate. This is in the nature of a semantic argument and will not be pursued here. For a discussion of the interpretation of tax progression, see R.A. Musgrave and Tun Tin, "Income Tax Progression", (1929-1948), The Journal of Political Economy, Vol. LVI, No. 6, December 1948.

is by no means certain that the average rate of tax will increase with rising incomes. It is not unrealistic, for example, to expect a large number of incomes grouped just below the exemption limit. As all incomes increase, this concentration of incomes will move up into the lowest rate bracket. When this happens, the tendency for the average rate of tax to increase as a result of upper incomes moving into still higher liability brackets will be off-set by a higher proportion of incomes falling into the lowest rate brackets. A similar case might result if the income increase occurred largely to wage earners who were concentrated in the lowest rate brackets. Under these conditions, although the tax base flexibility ensures that the tax yield will increase, the average rate of tax may actually fall.⁽⁶⁹⁾

The final consideration is that of speed of operation. In this connection it is necessary to distinguish the portion of tax collected annually in arrears from that withheld from earnings under the pay-as-you-earn (Schedule E) scheme.⁽⁷⁰⁾

(69) The likelihood of this effect is increased when the income tax, which embodies no rate increase above the standard rate, is considered (as it is here) separately from the surtax, since the latter ensures that the higher incomes will become liable at still higher rates, pulling the average rate upward.

(70) For an outline of the structure of the income tax system in the United Kingdom, see Central Office of Information, The British System of Taxation, H.M.S.O., London, 1958, pp. 12-19, or Ursula Hicks, Public Finance, *op. cit.*, 183-187. For a much more detailed account, see H.A.R.J. Wilson, Spicer and Pegler's Income Tax and Profits Tax, 20th edition, H.F.L. (Publishers) Ltd., London, 1953.

Roughly two thirds of all income tax paid on personal income is deducted at source through the P.A.Y.E. Scheme.⁽⁷¹⁾ The deduction of the tax in this way before the income is received ensures that there can be virtually no implementation lag between the initiation of a tax rate change and the fruition of results by way of a change in payments.⁽⁷²⁾

Similarly, the deduction of tax at source from interest and dividend payments involves no lag between the receipt of income and the payment of tax on it. In this case, however, there may be a significant lag between the earning of the income by the company

(71) In 1958, personal income tax payments amounted to £1569 millions (i.e. £1730 millions tax on income payments minus £161 millions surtax). National Income and Expenditure 1960, Tables 2 and 35. In the financial year 1958-59, £1026 millions was deducted under the P.A.Y.E. scheme; which amounts to 65.39 per cent of the 1958 calendar year income tax payments. One Hundred and Third Report of the Commissioners of Her Majesty's Inland Revenue for the Year Ended 31st March, 1960, H.M.S.O., Cmd. 1258, London, 1961 (henceforth 103rd Inland Revenue Report) Table 60. It should be noted that the estimates of personal income tax payments are not independently determined in the national income statistics, but are derived by deducting from total income tax payments the estimated payments of companies, public corporations, and foreigners. Surtax payments are separately recorded by the Inland Revenue Department. The reliability of the estimates of payments is, however, deemed to be good. See Central Statistical Office, National Income Statistics Sources and Methods, H.M.S.O., London, 1956 (henceforth Sources and Methods), p. 63.

(72) It appears that the effect is felt very quickly not only by the taxpayer but by the exchequer as well. In the 1958-59 financial year, for example, over 99 per cent of the total amount of P.A.Y.E. tax deducted by employers was paid in cash to the Exchequer within the period; 103rd Inland Revenue Report, p. 17.

or borrower and the payment of that income as interest and dividends.⁽⁷³⁾ Nevertheless, as far as the individual income receiver is concerned, his tax payment and income receipt is simultaneous. The lag involved between the earning of the income and its distribution is governed by company accounting procedure and will be discussed further under corporate taxation.

The remaining classes of personal income are the profits from trade of individuals, incomes from professions assessable under Schedule D, and individuals' profits from the occupation of land. The normal basis of assessment of these categories of income is the profit made (or income earned) in the taxpayers accounting year ending in the preceding year of assessment. Since the tax is assessed and becomes payable not more than twelve months after the end of any individual's accounting year, it follows that the lag between the actual receipt of the income and the payment of tax thereon can vary from a maximum of three years when the accounting period ends at the beginning of a financial year to one year, when the accounting period ends at the end of a financial year. If the income is regarded as existing only after the year's profits are determined (i.e. at the end of the accounting period) then the lag is reduced to a maximum of two and a minimum of something less than one year.

(73) The amount of tax falling on interest and dividends is considerable but cannot be ascertained because it is determined not only by the standard rate deduction at source, but also by the marginal rate applicable to the incomes of individual recipients.

To some extent taxpayers set aside reserves against tax liabilities as they accrue. Insofar as this practice is followed, the significance of the time lag for stabilizing considerations is eliminated. However, such earmarking of tax accruals is much less likely in the case of individuals than for corporate bodies.⁽⁷⁴⁾

It can therefore be concluded that the characteristics of the income tax on personal incomes suggest that it will tend to have a substantial built-in flexibility. It is of prime importance as a source of public revenue. Its progressive structure provides the possibility for both tax base and tax rate sensitivity to income changes. Finally, the deduction of the largest proportion of the tax is simultaneous with the receipt of income so that time lags are essentially eliminated.

Surtax

The surtax schedule complements the income tax system by continuing the progressivity of tax liabilities above the standard rate. It represents an additional duty on individuals' incomes which exceed four thousand pounds per year.⁽⁷⁵⁾

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- (74) The Central Statistical Office is of the same opinion. Although the national income accounts assume that persons establish a reserve against future tax payments, ".... it is doubtful whether many in fact do so." Individuals and companies have the opportunity of purchasing Tax Reserve Certificates to set off against future tax payments (see footnote 96, infra. p. 85).
- (75) The effective starting point for surtax was raised from £2000 to £4000 by the 1961 Finance Act, which made the earned income relief applicable to income tax deductible for surtax as well, and introduced a special earnings allowance for surtax payers. In effect, all earned incomes below £5000 per year are exempt. See the Financial Statement (1961-62), H.M.S.O., April 1961, (henceforth Financial Statement (1961-62)). For a description of the surtax schedule effective prior to 1961-62 see 103rd Inland Revenue Report, p. 80.

In terms of size it is much less important than the income tax, accounting for only about one-tenth as much revenue. (76)

Like the income tax, the surtax lends itself well to base and rate flexibility. Indeed, it is likely that base flexibility will be considerably greater than in the case of the income tax, because the tax schedule falls on incomes above the concentrated middle income groups (and hence on the upper 'tail' of the curve of income distribution). This means that the number of incomes and taxable income is more highly concentrated toward the surtax exemption limit and below. (77) As a result, a small increase in the level of incomes will - assuming the distribution of income remains unchanged - cause a proportionately larger increase in the amount of income falling under the tax; and a small fall in total income will reduce the amount of taxable income by a proportionately greater amount. The base flexibility will therefore tend to be greater than in the case of the income tax, where the number of taxable incomes falls off toward the lower end of the tax schedule.

However, this concentration of taxable income toward the lower end of the rate schedule will tend to offset rate flexibility. The

(76) In 1959, the surtax yield accounted for 2.66 per cent of total tax receipts. The relative importance of the surtax will undoubtedly be reduced, temporarily at least, by the increase in the exemption limit provided for in the 1961 Finance Act. The Treasury estimates that the changes will reduce the surtax yield by £83 million by 1963. This amount constitutes 46.89 per cent of the 1958-9 surtax yield. Financial Statement (1961-62), p. 22, Table XI, and 103rd Inland Revenue Report, p. 82, Table 72.

(77) See the classification of personal incomes by ranges of income for 1958-59; 103rd Inland Revenue Report, Table 64.

steep marginal rate schedule of the surtax code would in itself tend to produce a high degree of rate flexibility. But since, during an increase in incomes, a relatively large number of incomes (and amount of income) move into the tax schedule and become liable for tax at the lowest rates, the average rate of tax may even fall. Thus an increase in the yield may be accompanied by a fall in the average effective tax rate.

Surtax is paid in arrears " as a deferred instalment of income tax on or before the first of January following the year of assessment." (78) Thus surtax payments involve a time lag greater by one year than income tax payments outside the P.A.Y.E. scheme. The income tax assessed in any assessment year is for the most part paid in the last quarter of that year, whereas the surtax assessed in that same year is generally paid in the last quarter of the next financial year. The effects of this considerable lag between accrual and payment are circumvented only insofar as surtax payers make provisions for tax liabilities as they accrue. This can hardly be considered general practice in the personal sector.

In summary, the surtax is likely to show a high degree of automatic sensitivity to changing levels of personal income. But its small relative size, and the considerable time lags between accrual and payments suggest that its automatic flexibility will have much less compensatory effect than the income tax.

(78) 103rd Inland Revenue Report, p. 81.

National Insurance and Health Contributions

Revenue from national insurance and health contributions is not part of the general budgetary revenue of the central government and the funds are kept quite distinct from ordinary revenue. Nevertheless, in view of their compulsory nature these contributions can, for present purposes at least, be regarded as a direct tax on earnings. Moreover, following the procedure adopted in the national income accounts, both the employers' and employees' shares of contributions may be treated as a direct tax falling on the recipients of income from employment or self-employment. (79)

The National Insurance Acts provide that a weekly contribution must, except in special cases, be paid by or on behalf of every income receiver between school-leaving age and 65 years (60 years for women). In the vast majority of cases, the contribution is shared between the employee and employer. (80)

In terms of size, the national insurance and health contributions are exceeded in importance only by the direct taxes on personal and corporate incomes, and account for over fourteen per

(79) See Sources and Methods, p. 63. A similar approach is adopted and justified by Allan M. Carter, Redistribution of Incomes in Postwar Britain, Yale University Press, New York, 1955, p. 159. (See also his footnote p. 39).

It should be noted that for purposes of analysing the incidence of these contributions, this simplification would require considerable qualification. See Ursula Hicks, Public Finance, *op. cit.*, pp. 219-221.

(80) For an outline of the provisions for contributions, see the Report of the Ministry of Pensions and National Insurance for the year 1959, H.M.S.O., Cmd. 1133, London, August 1960 (henceforth Report of the Ministry of Pensions and National Insurance, 1959), Chapter VII.

cent of total tax revenue. (81)

Briefly, the contribution consists of a flat rate levy (which includes the national health and, where applicable, industrial injuries charges) shared between the employee and employer, the employee bearing more than half the total. (82) These flat-rate contributions cover all earnings up to nine pounds per week.

In addition, since April 1961, a graduated contribution is paid on all earnings over nine and up to fifteen pounds per week. The charge does not increase on earnings over fifteen pounds. The graduated contribution, which amounts to eight and one-half per cent of weekly earnings between nine and fifteen pounds, is divided equally between employee and employer.

The present flat-rate contribution (and indeed the whole contribution as it existed before April 1961) represents a poll tax on employment. Since liability depends upon employment rather than on the level of income, payments will vary in a straight-line relationship with employment. The base flexibility, therefore, will be proportional to the change in employment. The fixed level

(81) In 1959, national insurance and health contributions amounted to £898 millions or 14.14 per cent of total tax receipts. National Income and Expenditure 1960, Table 35. It is likely that both the absolute and relative importance of these contributions in central government revenues will be greater in later years as a result of the graduated contributions introduced in April 1961 (see footnote 82).

(82) A male employee, for example, bears nine shillings and ninepence, or 54 per cent of the total contribution of eighteen shillings and twopence.

For further details concerning the nature of contributions, see the Ministry of Pensions and National Insurance, A Guide to the New Graduated Pension Scheme Leaflet N.I. 111, January, 1961; also, the Report of the Ministry of Pensions and National Insurance for the Year 1959, op. cit., Chapter III.

of contributions regardless of income level means that the tax is regressive and the rate flexibility is negative.

The provisions for a supplementary graduated schedule, however, disrupt the direct proportionality between payments and employment and introduce a less regressive element into the contribution system. As weekly earnings rise above nine pounds, contributions will increase. Nevertheless, the increase will be only in proportion to the new increments of earnings. Since the proportional payments are in addition to the flat-rate levy, the tax remains regressive, though more mildly so. On income over fifteen pounds the contribution is fixed: the tax reverts to a regressive poll tax and the rate of flexibility becomes as strongly negative as with the flat-rate levy alone. To put the same thing in other terms, the marginal tax rate is zero on incomes up to nine pounds per week, constant and eight and one-half per cent on incomes between nine and fifteen pounds, and zero on incomes above fifteen pounds. The average tax rate therefore declines throughout.

Flat-rate contributions are paid by fixing or impressing stamps on cards or (for large employers) by cheque. The graduated contributions are collected in association with P.A.Y.E. income tax. In both cases there is virtually no time lag; the payment of contributions being simultaneous with the receipt of earnings.

The built-in flexibility of national insurance contributions is therefore likely to be significant. It is, first of all, one of the very largest single sources of central government current revenue. Moreover, the tax base fluctuates very closely with changes in the level of employment. Finally, there is no time lag between

the receipt of earnings and the payment of contributions. Only the negative rate flexibility fails to contribute to the compensatory impact of the tax.

It should be observed, however, that the off-setting effects of these contributions are likely to be greater during a downswing than during inflation. In a depression, the tax base will contract and contributions decline, thus tending toward a reduction in government revenues. Above the full employment level, however, the tax base becomes inelastic and, except for the small amount of proportional liability provided by the graduated schedule, liabilities will not expand.

Taxes on corporate income

Income tax is payable on the total net income of companies at the standard rate. Net income for income tax purposes is profit calculated broadly according to commercial accounting principles but with certain modifications, particularly in connection with depreciation allowances.⁽⁸³⁾ The traditional British conception of a corporate body being indistinct from its shareholders is reflected in the tax system where the income tax paid on distributed company profits is regarded as having been paid on behalf of the recipient bond or share-holder, and is therefore a payment out of the receiver's income. Interest or dividend recipients who are individuals are entitled to claim against this income any of the

(83) For a summary of the important difference in the calculation of profits for income tax purposes, see 100th Inland Revenue Report, 1957, pp. 3-14.

personal allowances and reliefs which may be due to them and may thus, in appropriate cases, obtain repayment of the whole or part of the tax. In effect, therefore, the tax which is borne by the company consists of the standard rate on retained profits. With certain simplifying assumptions regarding incidence, it can thus be regarded as a proportional tax on the undistributed profits of corporate bodies.

In addition to the income tax, companies are liable to profits tax.⁽⁸⁴⁾ Profits tax, as it is at present constituted, consists of a flat percentage charge on profits, both distributed and undistributed, and, since 1952, is not allowable as a deduction in computing profits for income tax purposes. Certain specific concessions apply, however, in the case of profits tax.⁽⁸⁵⁾

Subject to these minor modifications, profits for profits tax purposes are calculated as for income tax. Companies, therefore, pay two proportional taxes; the profits tax rate on all profits, and the standard income tax rate on that portion not distributed.

(84) Profits tax is also payable on the profits of trade or business (including the holding of investments) carried on in the United Kingdom by unincorporated societies or other bodies, or carried on abroad by bodies ordinarily resident in the United Kingdom. However, ".... except for small amounts from other sectors, which can be closely estimated, these taxes fall only on companies." Sources and Methods, p. 66.

(85) Income from investments (other than 'franked investment income') is subject to tax, and interest on borrowed money is deductible. No tax is payable on profits not exceeding £2,000 in a given accounting period and on profits between £2,000 and £12,000 an abatement is allowed. See 103rd Inland Revenue Report, pp. 88-89.

For present purposes, these can be considered together. It may be noted that if the share of profits retained remained constant, the two levies would constitute a fixed proportional charge on total net income.

These two taxes on profits taken together provide a source of revenue which, in size, is second only to the taxes on personal incomes; comprising some fifteen per cent of total tax revenue.⁽⁸⁶⁾ In terms of size, therefore, taxes on profits comprise a potentially powerful fiscal tool.

The built-in flexibility of the corporate tax depends upon the way income is defined for tax purposes. An important consideration in this regard is the treatment of depreciation. The depreciation charged in the business accounts is not permitted for income tax purposes. There is instead a comprehensive system of allowances covering all the main classes of capital assets. The provisions vary between different classes of assets but generally an "initial" or "investment" allowance is deductible when the asset is acquired, annual allowances until the asset is completely written off or ceases to be used, and a final balancing allowance (or charge) to bring the total allowances (other than any investment allowance) into line with the difference between cost and any disposal proceeds. All charges are based on the original cost of the assets. The initial

(86) In 1959, 15.22 per cent of total tax revenue was derived from taxes on the income of corporate bodies. (A negligible amount - probably less than 0.5 per cent - of these corporate tax payments consisted of excess profits tax and excess profit levy payments carried forward from years when these additional charges were in force.) National Income and Expenditure 1960, Table 80.

allowance is merely a bringing forward of depreciation charges which would otherwise be allowed in later years. It is therefore analogous to a tax free loan from the Exchequer. The investment allowances, on the other hand, are not taken into account in calculating later allowances. It is given in addition to annual and balancing allowances (or charges) which of themselves normally amount to the full net cost. It is, therefore, in the nature of a subsidy to new investment. Initial and investment allowances are never both permitted on the same asset.⁽⁸⁷⁾

The calculation of these allowances on the basis of original cost of the assets, rather than current or replacement value, creates an element of automatic flexibility in the corporate tax system. In periods of inflation when the money values of assets are rising, depreciation allowances remain at an "unrealistically" low level, and hence taxable income is to that extent greater. Similarly, in depression, depreciation allowances remain higher than market values would justify and hence taxable profits are reduced. The effects of this method contrast sharply with replacement cost depreciation where the larger offset against profits in inflation would reduce tax liabilities - the opposite to what compensatory finance requires. The existence of initial allowances mitigates this difference insofar as, during a price change, a smaller fraction of the asset value on which the allowance is calculated remains outstanding. Investment allowances, which have

(87) For a description of Inland Revenue allowances on capital assets, see Sources and Methods, p. 330.

no influence on later deductions, do not have this effect.

The impact of accelerated depreciation becomes more difficult to appraise when the probable cyclical changes in investment are introduced. If an inflationary situation is associated with a rise and depression with a fall in fixed investment, high initial depreciation allowances will reduce the cyclical variation in tax yields. Much depends, however, on the extent that the allowances permitted by the revenue authorities influence company accounting and managerial decisions.

Another consideration of a similar nature is the method of evaluating inventories. The revenue authorities in Britain do not stipulate any particular system of stock evaluation but insist merely that it be done on a reasonable and consistent basis. It is clear, however, that where valuations follow the Fifo basis, automatic flexibility is greater.⁽⁸⁸⁾ If prices fall during a recession, reported profits and tax liabilities will fall more rapidly than in the case of firms following the Lifo system.⁽⁸⁹⁾

A final consideration relates to the treatment of business losses, and in particular the provisions for the carrying of losses through

(88) The Fifo, or first-in-first-out method, means that goods are valued at their price at the time they entered inventory, and assumes that goods are sold in the order of their acquisition. This is the opposite of the Lifo or last-in-first-out method.

(89) On the other hand, although the liquidity position of firms using the Lifo system will be more adversely affected during a recession, their smaller decline in reported profits may help prevent business pessimism and hence contribute to the stability of investment.

time. In Britain, losses may be carried forward and set off against future profits without time restrictions. That is to say, net losses must be set against the first available taxable profits, but any loss balance can be carried forward until it is absorbed.⁽⁹⁰⁾ This provision tends to restrict the built-in flexibility of the tax by decreasing the variability of tax liabilities over the business cycle. Past losses can be offset against profits in periods of rising income and hence tax liabilities reduced at a time when compensatory finance would ordinarily require an increase.⁽⁹¹⁾

These features modify the built-in flexibility resulting from the proportional tax structure. Except for the minor exemptions allowed for profits tax, corporate tax is levied on all net income. This means that there is no tax base flexibility in the sense that the proportion of corporate income liable to tax changes over a cycle. There is base flexibility, however, in the sense that corporate profits are a particularly volatile part of total income, and the corporate tax base is therefore highly sensitive to economic fluctuations.

Any tendency on the part of companies to maintain dividend payments will also contribute to the flexibility of the corporate

(90) See H.A.R.W. Wilson, op. cit., pp. 288-289, also p. 505.

(91) The federal tax law in the United States, since 1950, allows a one-year carry back of net operating losses but permits a five-year carry forward. The carry forward was apparently given preference because it avoids the administrative difficulty of reopening old tax returns and because it is relatively more advantageous to new and growing businesses. (The carry back favours established and declining business.) Nevertheless, the emphasis on carry forward is undoubtedly disadvantageous for the compensatory effects of the tax.

tax base.⁽⁹²⁾ Maintenance of dividends in depression years means that a higher proportion of corporate income is distributed, and hence less income tax will be payable by companies. It should be noted, however, that any such tendency will adversely affect the liquidity of firms during the depression and, indeed, higher net profits resulting from a tax reduction in such periods may simply be used to stabilize dividend payments. Moreover, of the higher proportion of profits distributed, the fraction saved can be expected to be well above the marginal propensity to save of the community as a whole.⁽⁹³⁾

The time lag between the earning of profits and the payment of tax is considerable in the case of the income tax liabilities of companies. As in the case of business and professional earnings in the personal sector, company income tax becomes payable in the last quarter of the financial year in which the assessment is made. The assessment is based on the profits earned in the company's accounting period ending in the preceding financial year. Thus the profits earned in the accounting year ending in the 1959-60 financial year will be assessed at the rates (and depreciation allowances) applicable in 1960-61, and the tax will be paid in the last quarter of that year (i.e. after January

(92) Between 1949 and 1959, the annual increase in gross company profits ranged from 20.29 per cent to minus 12.64 per cent, while the annual increase in dividend payments on ordinary and preference shares varied only from 12.36 per cent to minus 2.56 per cent. Calculated from National Income and Expenditure 1960, Table 25.

(93) This point is discussed by Richard Goode, "The Corporate Income Tax in a Depression", Policies to Combat Depression, pp. 149-170. See also his The Corporation Income Tax, John Wiley and Sons, Inc., New York, 1951, p. 108.

1961).⁽⁹⁴⁾ There is, therefore, a maximum lag of two years between the declaration of profit and the payment of tax thereon. When a company's accounting year ends late in the financial year, the lag is closer to a single year.

The lag in profits tax payments is much shorter. Not only is the tax assessed on the current year's profit, but it becomes due and payable one month from the date of assessment.

The effect of any time lag in delaying the tax effects on spending behaviour is obviated to the extent that companies make provisions for future tax payments by setting aside tax reserves out of current income. The extent to which this practice is actually followed is not accurately ascertainable, but it can be expected to be the usual procedure.⁽⁹⁵⁾ The Exchequer encourages the provision for future tax liabilities by giving taxpayers the opportunity of purchasing Tax Reserve Certificates. These Certificates, however,

(94) The actual payment of tax may sometimes be held up for administrative reasons or because of litigation; ".... but on the average about 95 per cent of the income tax collectable out of that assessed in any income tax year is paid in the first calendar year." (i.e. the year following the beginning of the last quarter of the financial year in which the assessment was made). Sources and Methods, p. 166.

(95) ".... it is generally held to be prudent accounting for a company to guard against a reversal of fortune (when it might have to pay a large amount of tax in a year of low profits) by reserving enough to cover both the income tax chargeable in respect of the current year and also income tax chargeable in respect of the assessment for the later year that will normally be calculated on the amount of the current year's profit Hence, following the companies own practice The total tax charge (tax payments plus additions to tax reserves), which often varies widely from actual payments because of changes both in the level of profits and in the rates of tax, is for most purposes the appropriate figure to deduct from gross profits for analysis of the trend of profits after tax and of saving." Ibid. p. 150.

bear interest at only one and one-quarter per cent per annum for each month held, but not exceeding twenty-four months. Tax Reserve Certificates are purchased in considerable quantity, though it is unlikely that they provide the major means whereby firms make reserves for tax accruals.⁽⁹⁶⁾ It is probable that businesses find more profitable means of holding tax reserves.

It may be concluded, therefore, that the taxes on corporate income are likely to show an important degree of built-in flexibility. They are, first of all, a most important source of public revenue in terms of size. The tax base shows a high degree of cyclical variability which is enhanced by the practice of original cost depreciation and the tendency to maintain dividend distributions. On the other hand, the provisions for loss carry forward provide at least a potential moderating influence on base flexibility during a period of rising profits. The proportional tax base shows no inherent flexibility though its relatively high level ensures that the Exchequer will absorb a large share of changes in profits. Finally, the common practice of making provisions for tax liabilities as they accrue eliminates, to a large extent at least, the effects of time lags.

(96) The Treasury can provide no details regarding the nature of Tax Reserve Certificate holdings. However, the value of Tax Reserve Certificates outstanding at March 31st each year is roughly one-third of annual corporate tax payments on income (See Central Statistical Office, Annual Abstract of Statistics, No. 97, 1960, H.M.S.O., London, October 1960, and National Income and Expenditure 1960, Tables 292 and Table 3 respectively.) The amount of accrued tax at the end of the fiscal year is not known, but in view of the lags in income tax referred to above, it is likely to be considerably greater than one-third of yearly income.

Indirect Taxes

Taxes on expenditure account for more than one-third of central government tax revenue.⁽⁹⁷⁾ The indirect taxes of the United Kingdom consist mainly of customs duties, excise duties, and the purchase tax. The customs and excise duties form an integrated system; customs duties usually being charged on imported goods if there is an excise duty on similar goods of domestic manufacture.

Because of Britain's heavy dependence on imported supplies of a number of basic commodities (for example tobacco, petroleum), a substantial amount of what in many other countries would take the form of internal revenue is collected as customs duties. Custom duties are therefore commonly sub-divided into two categories: those whose primary function is to provide revenue ("revenue duties") and those which exist mainly to give protection to United Kingdom or Commonwealth producers ("protective duties"). For analytical purposes, however, the distinction is not important and may be disregarded.⁽⁹⁸⁾

The overwhelming share of customs and excise revenue arises from the levies on a few groups of commodities; mainly tobacco, goods taxable under purchase tax, alcoholic beverages and hydro-carbon

(97) In 1959, 39.12 per cent. Calculated from National Income and Expenditure 1960, Table 35.

(98) For a description of the structure of indirect tax system in the United Kingdom, see The British System of Taxation, op. cit., Parts IV and V; and the annual Report(s) of the Commissioners of Her Majesty's Customs and Excise, H.M.S.O., London.

oils. (99)

The purchase tax is distinct from the customs and excise duties in that it is an ad valorem tax collected at the wholesale level, and applies to a wide range of consumer goods rather than to specific items. It is, however, collected and administered by the Customs and Excise Department and the receipts from it are regarded as part of customs and excise revenue. (100) Imported goods are liable to purchase tax at the same rate as goods of British manufacture. The tax was originally imposed (in 1940) in an effort to reduce consumption so as to release resources for war purposes and to provide emergency revenue. It is now regarded as essentially a source of revenue. Its rates are a simple percentage of the wholesale value of the goods, and the tax normally becomes payable when goods pass from a registered manufacturer or wholesaler to retailers or consumers.

(99) In 1959-60, total customs and excise revenue was accounted for by these groups in the following manner:

	<u>£ million</u>	<u>% total</u>
Tobacco	788.5	34½
Purchase tax	501.5	22
Hydro-carbon oils	381.0	16½
Beer	218.9	9½
Wines and spirits	165.8	7½
Protective duties	136.5	6
Other duties	90.4	4
Total	<u>2,282.6</u>	<u>100</u>

From 51st Report of the Commissioners of Her Majesty's Customs and Excise, for the year ended 31st March, 1960, H.M.S.O., London, 1960 (henceforth 51st Report of H.M. Customs and Excise) paragraphs 6 to 17.

(100) Unless otherwise noted, reference to customs and excise revenue will henceforth be meant to include purchase tax receipts.

The built-in flexibility of an indirect tax base can take two forms. The first relates to the income elasticity of demand for the taxed goods. To the extent that the goods are income elastic, more will be purchased in periods of rising incomes and hence the tax base expands. Conversely, in depression, purchases (and the tax base) may be expected to contract. However, this flexibility of the tax base will arise only if the change in money incomes is not accompanied by a change in prices of the same proportion. If all prices rise together in equal proportion to an income increase (or fall in proportion to an income decrease), real purchases cannot be expected to change - except as a result of various possible money illusions - and the tax base flexibility will not be manifested. If a price change does not occur, or is proportionally smaller than the change in income, base flexibility will be positive whenever there is a positive correlation between income and purchases of the taxed commodities, and will be negative only in the case of inferior goods.

In the case of ad valorem taxes a second cause of base flexibility is introduced when prices are sensitive to income fluctuations. For these taxes the tax base is not the goods themselves but their money value. Hence, when the prices are rising, the ad valorem tax base expands and vice versa during a decline. This type of base flexibility clearly exists for the purchase tax but not for other customs and excise duties.

Rate flexibility will be neutral (by definition) for any ad valorem tax. However, in the case of excises or any taxes with

fixed money rates the rate flexibility will be neutral only as long as the price of the goods remains constant. If commodity prices change over a business cycle then rate flexibility becomes perverse. As long as the money charge is fixed then the tax rate effectively increases when prices fall and is eroded away when prices rise.

Apart from the purchase tax, therefore, customs and excise duties will show, if anything, a negative rate flexibility. Base flexibility will be positive to the extent that the tax falls on commodities with a positive income elasticity of demand, and when the change in money incomes is greater than the change in prices.

The purchase tax yield can be expected to show considerably greater compensating variability. Since the tax is an ad valorem levy, rate flexibility will be zero. Base flexibility, however, will probably be high for a number of reasons. Firstly, any change in wholesale money value of goods on which the tax is levied will broaden the base on which the rate is applied. Secondly, the tax is explicitly levied on goods with a high income elasticity of demand. Finally, the tax is designed to apply at higher rates on goods which are more "luxurious" in nature and which therefore almost certainly show a higher income elasticity of demand. (101)

Specific duties will therefore show less sensitivity than those which are levied ad valorem, because their yield will not fluctuate pari passu with price changes. Against this, however, it is necessary to consider that a fixed charge on a commodity means that

(101) See 51st Report of H.M. Customs and Excise, pp. 101-2.

its market price will show a smaller variation in response to producer's price fluctuations than in the case of an ad valorem rate. As a result, in the case of commodities for which demand is very elastic, substitution and real income effects may produce a relatively high degree of yield sensitivity.

Furthermore, some broad generalizations might be made regarding the type of goods taxed. Since final consumption usually varies less than the whole of national expenditure, it may be expected that taxes on goods for final consumption, and the materials used in their manufacture, will show less yield variability than taxes on investment goods. ⁽¹⁰²⁾ The yield of taxes levied on goods

(102) R.F. Bretherton, in probably the earliest empirical study of tax sensitivity, "The Sensitivity of Taxes to Fluctuations of Trade", Econometrica, Vol. 5, No. 2, April 1937, pp. 171-183, shows that during the period 1921 to 1935 the yield from the principal excises, namely tobacco duties, sugar and molasses duties, beer duties, and spirit duties showed low sensitivity to trade fluctuations (but marked secular trends in some cases). Measuring cyclical sensitivity as the ratio of the percentage change in tax yields (corrected for changes in rates during the period) to the percentage change in national ("social") income, the sensitivity of these excises proved to be:

	<u>Upswing</u>	<u>Downswing</u>	<u>Recovery</u>
Tobacco duties	1.14	0.11	1.00
Sugar duties	1.49	0.98	-
Beer duties	0.12	1.28	0.34
Spirit duties	1.19	1.60	0.33

The sensitivity of this group is markedly lower than for the other main sources of revenue. It must be remembered of course that the structure of taxation has changed greatly since these calculations were made, though the changes in these excises are probably less fundamental than in the other main sources of revenue.

for which there is an increasing secular demand will probably show a low sensitivity to a fall in income and a high sensitivity to recovery while the opposite will tend to be the case with goods for which there is a secular decline in demand. Finally, insofar as the world prices of imports fluctuate more than those of domestic products, the yield from import duties will vary more than the yield from excises.

The impact of indirect tax flexibility is unlikely to involve any significant time lag. Customs and excise charges are incurred by the consumer at the time of purchase, so that even if the Exchequer's receipt of the revenue involves a delay, the impact on consumers' spending behaviour is likely to be immediate. In the case of purchase tax, the revenue is collected quarterly and the receipts during each quarter relate to sales and appropriations by registered traders during the preceding quarter. (103)

Other duties and taxes

The remaining taxes on expenditure, namely stamp duties, broadcast and motor vehicle licences, and the taxes on entertainments and betting, are of less interest because of their small relative size in terms of revenue. Motor vehicle licences, the largest single item, account for less than two per cent of total central government tax revenue. (104) This duty is fixed at a flat rate

(103) See 51st Report of H.M. Customs and Excise, p. 101.

(104) i.e. 1.72 per cent in 1959, National Income and Expenditure, 1960, Table 35. The increase in motor vehicles duties proposed in the 1961 budget is expected to increase the revenue from this item by one quarter; Financial Statement (1961-62), Table XI.

regardless of the value of the vehicle and hence represents a regressive rate structure. Like excise taxes, motor vehicle licences will show, if anything, negative rate flexibility. Base flexibility will be positive insofar as motor vehicles show a positive income elasticity of demand and automobile price changes are smaller than income changes. There is virtually no lag involved in the impact of the behavioural effects of the duty except that the number of vehicle owners in the short run is likely to be highly inelastic, so that any tax-induced adjustment in car ownership may take some time to materialise. Motor vehicles provide a classic example of a commodity for which there is a secular increase in demand, and hence the yield of the motor vehicle duty can be expected to show a high sensitivity to rising income and a low sensitivity to depression. (105)

The only other taxes of any importance are death duties and local authority rates. Death duties (of which only the estate duty is chargeable in connection with deaths occurring at the present time) account for between three and four per cent of central government tax receipts. (106) It is levied on estates with a net capital of over three thousand pounds and is charged at progressive rates which rise to eighty per cent on estates valued at more than two million pounds. (107)

(105) This is borne out in Bretherton's study (op. cit.) where (at a time when the automobile market was in an early stage of development) expanding demand almost obscured the effects of the depression. His sensitivity index for motor vehicle duties was 6.63 during the upswing, 0.18 during the downswing, and 2.48 to recovery.

(106) In 1959, 3.34 per cent. National Income and Expenditure 1960, Table 35. An insignificant proportion of these receipts is accountable to death duties other than the estate duty which have since been abolished.

(107) For details of the rate structure, see 103rd Inland Revenue Report, pp. 105-129.

The yield from death duties will show flexibility to the extent that changes in the value of money over a cycle cause corresponding changes in the valuations of property. During a period of rising money values, estates will become liable at higher rates. Moreover, fewer estates will fall below the exemption limit. The reverse base and rate flexibility will occur in periods of declining money values.

The value of estates will tend to fluctuate closely with the security market since a large share of taxable estates consists of government and private securities and company shares. Moreover, the prices of such securities tend to fluctuate much more than the national income. It is also clear that the owners of very large estates tend to hold a greater proportion of their wealth in the form of industrial equities whose prices are more sensitive than government bonds or real property. (108)

Death duties are likely, therefore, to show a high sensitivity to cyclical changes, even though the number of estates which become liable to tax (i.e. the number of deaths) is unlikely to show any cyclical response. The stabilizing impact of this flexibility, however, is likely to be very limited. In the first place the tax is paid out of non-recurrent income and hence is likely to have a small effect on spending behaviour. Secondly, the fiscal efficiency of the tax is undoubtedly low since the beneficiaries of valuable legacies tend to have a high propensity to save. Finally, the impact on spending behaviour is restricted by the

(108) For an analysis of the form of taxable estates, see 103rd Inland Revenue Report, Table 109.

highly illiquid form in which many inheritances are received.

Local rates are of less interest from a compensatory point of view in spite of their importance as a source of revenue. (109) To begin with, they accrue to local governments who are not directly concerned with fiscal policy and hence any ceteris paribus assumption about revenue changes is likely to be highly unrealistic. Rates exist purely for revenue purposes and hence tend to be inflexible, particularly in the downward direction.

Rates are set on a proportional basis so that rate flexibility tends to be neutral. In any event, the rate is set annually so that automatic flexibility is of limited significance. Base flexibility arising out of income elasticity of demand for housing is highly uncertain since the housing market is influenced by strong independent pressures; such as government housing policies and rent controls. Finally, base flexibility arising from the swings in assessed values in sympathy with cyclical fluctuations is largely eliminated by the administrative policy of applying out-of-date valuations. For these reasons local rates cannot be expected to have any great stabilizing influence.

Clearly, the most significant built-in flexibility on the revenue side of the budget arises out of the direct taxes on personal and corporate incomes and certain of the customs and excise duties. The other sources of revenue can have little compensatory influence

(109) In 1959, revenue from rates amounted to 39.47 per cent of local authority current revenue. National Income and Expenditure 1960, Table 39. In terms of relative size, it was the third largest single source of tax income (after income tax and tobacco duty).

either because they tend to have a limited impact on spending behaviour or because they are too small to exert a significant fiscal impact.

2. Expenditure Adjustments: Unemployment Benefits

On the expenditure side of the budget, there are fewer items which are likely to show an automatic flexibility in response to economic fluctuations. There are, of course, a number of heads which would probably be expanded in times of depression, such as public works spending and grants to local authorities and nationalized (or other) industries, but such changes would require approval and are not, therefore, automatic. Even agricultural subsidies, being fixed in money terms, would not automatically cause an expansion in public payments.

Similarly, most of the important transfer expenditures - family allowances, sickness and injury benefits, retirements pensions, and widows and maturity benefits - can hardly respond to cyclical fluctuations. Only unemployment benefit payments are certain to show a predictable compensating movement.⁽¹¹⁰⁾

The statutory provisions for payments to the unemployed ensure that this form of transfer outlay must automatically expand during a period of recession, and these payments will permit the recipients

(110) The fall in purchasing power of the unemployed during a recession may be mitigated by tax rebates also. P.A.Y.E. tax payments depend on the individual's coding number which is based on an estimate of income in the tax year (in fact it is based on the amount of the previous year's income). If there is a sudden recession and earnings fall below the expected monthly average, the employed person is entitled to a tax rebate, and this is usually paid without delay.

to maintain a minimum level of consumption spending and therefore soften the fall in demand. However, two qualifications apply to the stabilizing action of unemployment benefits. Firstly, they are sensitive to the level of employment, not income, and so any generalization about their compensatory effect on income fluctuations must subsume some direct correlation between income and the level of employment. Secondly, they are sensitive to downswings only, since after a certain level of employment is attained they will show no further compensating decrease in payments during inflation.⁽¹¹¹⁾

Except in severe depressions, the impact of of unemployment benefit flexibility is limited because of the relatively small size of these payments in the governmental current account.⁽¹¹²⁾ The

(111) The 1961 Budget included a proposal to enable the Treasury to impose a surcharge on employers in the nature of a payroll tax. The proposal was aimed at providing the Treasury with temporary power to tax employers when the pressure on employment demands such fiscal action. It should be noted that the proposed tax is not really a tax on payrolls as such but on employment. If used, this tax would represent an addition to the employers' share of national insurance contributions, and, from a fiscal point of view, a complement to the unemployment benefit in times of excess demand. However, liability to this tax would be at the discretion of the Treasury and cannot, therefore, be considered automatic. See the Financial Statement (1961-62), p. 23. For a forceful criticism of the payroll tax as an anti-inflationary device, see E.J. Mishan, "The Emperor's New Clothes: the Payroll Tax Stripped Bare", The Bankers' Magazine, No. 1408, July 1961, pp. 17-22. Mishan argues, among other things, that if the payroll tax is successful in its aim to induce economy in labour employment by switching to more efficient (capital intensive) methods, the higher expenditure on investment will increase demand enough to offset the contractionary effects of reduced pressure on the labour market.

(112) The level of unemployment benefits vary considerably but in 1958, a recession year in which the share of these payments in current expenditure was highest for the decade since 1949, they accounted for 0.82(5) per cent of current central government expenditure on goods and services and transfers. National Income and Expenditure 1960, Tables 35 and 38.

unemployment benefit system now in force provides weekly allowances to unemployed persons according to their marital status and number of dependents but bearing no relation to the income normally earned. (113)

Thus if it is reasonable to assume a straight line relationship between income and employment below the full employment level, the system will show a proportional base flexibility. Since the benefits are uniform and fixed, there will be no rate flexibility.

To the extent that the assumption regarding the relationship between income and employment is valid, unemployment benefits can be regarded as negative taxes on persons who involuntarily earn no income, and for analytical purposes, can therefore be treated in the same way as a direct tax on personal income.

3. Measures to Strengthen Built-in Flexibility

The built-in flexibility of the tax and transfer systems could be strengthened in a number of ways. Any changes in pursuit of greater flexibility would, however, almost certainly have repercussions on other policy objectives and hence may not be warranted. Nevertheless, in view of the fairly frequent references in the literature to the advisability of greater reliance on non-discretionary controls, it may be considered appropriate in the present context to outline briefly the direction in which any such changes would have to be made. (114)

(113) For an outline of benefit rates, see Report of the Ministry of Pensions and National Insurance 1959, Table 29.

(114) See especially G.L. Bach's "Monetary - Fiscal Policy Reconsidered", Journal of Political Economy, Vol. LVII, October 1949, pp. 383-394; Milton Friedman, "A Monetary and Fiscal Framework in Economic Stability", op. cit.; Albert C. Hart, "Timing and Administering Fiscal Policy: How to Give Relevant Council", American Economic Review, Vol. 38, May 1948, pp. 430-448; and Taxes, National Security, and Economic Growth, A Report by the Committee for Economic Development, New York, 1954, p.10 et seq.

Clearly, the limits to built-in flexibility of the various taxes are set by their coverage, their marginal rates, and their promptness of impact. Automatic flexibility would be "perfect" only if all income increases (or decreases) were liable to a marginal tax (or benefit) rate of one hundred per cent without time lag. However, various modifications of the present framework would increase the existing sensitivity of the financial structure.

First of all, any broadening of the tax base would, ceteris paribus, increase the variability of tax yield and hence also the automatic fiscal effect. This could be accomplished by various measures. The tax base of the personal income tax could be widened by reducing exemption limits and including capital gains as income. This latter represents a particularly volatile source of income which, ipso facto, would contribute a disproportionate increase in sensitivity to the direct tax on personal incomes. The scope of indirect taxes might be increased by including a wider range of consumer goods, services, and (especially) investment goods.

The higher the effective rate of tax the greater the flexibility of tax yield. Thus an increase in the average rate of any tax - direct or indirect - will increase the regulatory effect of the system. By the same token, an increase in the rate of unemployment benefit will increase flexibility during a downswing.

Flexibility can also be strengthened by steepening the rate structure of any tax. A more sharply graduated schedule of marginal rates applicable to personal incomes (without necessarily increasing

the average rate) would increase the variations in tax yield. A similar result would be achieved by charging national insurance contributions at a proportional or even a progressive rate on earnings. A graduated schedule applicable to corporate incomes or any increase in loss offsets without time lag, would have a similar effect, buttressed by the fact that company profits are particularly sensitive to the level of economic activity.⁽¹¹⁵⁾ Progressivity can be applied to indirect taxes by relating the tax rate to the income elasticity of demand for the taxed commodities.

Any measure which relates taxes or benefits more closely to the level of income strengthens their compensating effect. Thus a payroll tax rate may be designed to vary in response to some formula relating to the level of employment, or, even more effectively, to the level of earnings. If agricultural subsidies, instead of being granted in the form of fixed gratuities (i.e. "excise" subsidies), were related to a moving price differential, the variability in outlay would have a distinct regulatory effect (as long as the agricultural prices varied with those of the rest of the economy). A similar effect would result if investment and initial allowances were inversely related to company profits.

(115) Incidentally, the excess profits levy, which was in force from January 1952, to December 1953, and consisted of a 30 per cent charge against the amount by which the company's profits exceeded its "standard" (historical average) profits increased the yield flexibility of profits taxes by raising the marginal rate chargeable during a period of business prosperity.

Time lags could be reduced by extending the withholding (P.A.Y.E.) system, by assessing current earnings rather than those of some past period, or by giving increased incentives for providing tax accruals. Among taxes on personal incomes the surtax system, particularly, suffers a serious (and perhaps unnecessary) time lag. On company income charges the delay might be reduced not only between earnings and assessment but also between assessment and payment.⁽¹¹⁶⁾ The incentive for setting aside tax reserves against future obligations, thereby minimising the effect of time lags, might be increased by offering higher interest on Tax Reserve Certificates.

Finally, certain generalizations can be made about the relative advantages of some forms of tax from the point of view of automatic flexibility. If it is accepted that income fluctuates more widely over a cycle than does consumption, then an income tax will show more variation in yield than an indirect tax system of the same progressivity. Among indirect taxes, ad valorem charges such as the purchase tax are clearly preferable to flat rate excises. Because of its shorter lag, a heavier dependence on the profits tax rather than the income tax on company incomes would increase sensitivity.

In short, any measure that would broaden the tax base, increase the effective tax rate, steepen the marginal rate structure, or reduce time lags in payment would increase built-in flexibility and

(116) In the United States, corporate taxes are paid in two equal instalments in the first half of the year following assessment. See Richard Goode, "The Corporate Income Tax in a Depression", op. cit.

hence also the compensatory effect of the fiscal system.

4. Automatic De-stabilizing Forces

In contrast to the devices described above there are a number of influences in the economy which tend to aggravate rather than mitigate economic fluctuations. Most of these are not primarily fiscal in nature, and they tend to arise out of illusions of various kinds. Nevertheless, they deserve at least a brief mention in the present discussion.

Probably the most powerful influence arises in the money and credit system. In a period of increasing business activity and rising incomes and prices, the demand for credit for the financing of business and consumer buying tends to increase. At the same time, risks appear more favourable during a period of business optimism and credit facilities are extended to their limit. A recession, on the other hand, usually stimulates the desire to hold idle balances and leads to caution on the part of lenders. The result is an exaggerated expansion of consumption in prosperity and contraction in recession.

The banking system's policy of maintaining a certain proportion of assets in liquid form reinforces this effect, since when the community chooses to hold more money in the form of deposits, as may be expected during a period of rising incomes, the total available stock of money increases. In a recession, caution may well induce banks to increase their reserves in relation to their liabilities, thereby forcing a contraction in deposits. Expansions and contractions

in bank credit are clearly to some extent a reflection of business fluctuations; but they almost certainly serve to increase the amplitude of these fluctuations. (117)

The debt policy of the government will also show a tendency to conflict with compensatory measures. A budget deficit in depression entails government sales of securities at a time when the central bank may well be trying to reduce interest rates in order to stimulate recovery.

Pressure almost inevitably arises for perverse fiscal adjustments over the course of a cycle. During a depression the government is pressed to reduce spending when the burden of increased expenditure is exaggerated by reduced revenues. In periods of prosperity fiscal arguments for a reduction in public spending often appear weak in the eyes of the public when the government's financial capability of providing public facilities is increasing.

Finally, the accelerator hypothesis suggests that in addition to the direct effects of businessmen's expectations on investment, there is an automatic tendency for investment to expand at an increasingly high rate during periods of rising production and demand.

(117) It is therefore changes in the stock of available money that tend to cause the banking system to aggravate fluctuations. If the quantity of money was held constant, the monetary system might provide a stabilizing influence, since as the demand for cash increased in prosperity, interest rates would tend to move in a compensating direction. Similarly if prices changed, real wealth would change in the opposite direction, and this might influence spending in a compensatory way. On the other hand, if changes in the stock of money reflected budget deficits or surpluses (as suggested by Friedman in "A Monetary and Fiscal Framework for Economic Stability", op. cit.) the above two effects would be reinforced.

Conversely, investment tends to fall off when demand ceases to rise. The existence of initial and investment allowances will aggravate this situation by providing larger offsets against profits when income is rising and smaller offsets (i.e. proportionately greater tax liability) in recession. Such a tendency is in direct conflict with the objectives of fiscal control.

CHAPTER IV

A THEORETICAL FRAMEWORK FOR ASSESSING BUILT-IN FLEXIBILITY AND ITS STABILIZING EFFECT

"While much has been said in recent years about the growing strength of built-in stabilizers, these remain to be tested."

(Richard A. Musgrave, The Theory of Public Finance)

The nature of automatic flexibility and the fiscal devices which give rise to it were examined on the previous pages. It is the purpose of this section to develop a theoretical framework within which a measurement of built-in flexibility and its impact on economic stability can be represented. Thus equipped with a methodological approach to the problem, an empirical quantification of automatic flexibility and its compensatory effect will be attempted in the following chapter.

The context of the economic relationships in this and the following sections will be one of a simple model of a static economy. The conclusions regarding the compensatory effects of fiscal changes will apply therefore to fluctuations of a structural or non-self-correcting nature, cyclical movements, and to short-run fluctuations around a growth trend.

The approach adopted consists in representing the relevant changes in a relatively simple static model which does not take explicit account of time. In addition, as is usual with such models, it is implicitly assumed that a change in investment

spending has no effect on the level of real income. Since, for reasons given earlier, the main concern in this context is in the short period in any event, this latter simplification is not unrealistic.

It must be emphasized that the model adopted is only one of a wide variety of possibilities; and that the particular relationships chosen have important implications for the results arrived at. The model constructed here is specifically designed to concentrate on the effects of direct tax changes.

1. A Measure of Built-in Flexibility

The first requirement is to postulate an appropriate form in which automatic flexibility can be quantitatively represented. For the purpose of measuring fiscal impact, the most informative measure for short run analysis is one that indicates the absolute change in tax yield (or benefit payments) associated with a given change in income.⁽¹¹⁸⁾ This may be expressed as:

(118) Various other expressions of built-in flexibility have been suggested. William Vickery defines built-in flexibility as the ratio of tax yield in prosperity to the yield in depression: "The Effect of Averaging on the Cyclical Sensitivity of the Yield of the Income Tax," Journal of Political Economy, Vol. LIII, No. 3, September 1945, pp. 275-276. R.A. Musgrave and M.H. Miller use an elasticity measure, viz. the ratio of the percentage change in tax yield to the associated percentage change in income: "Built-in Flexibility," American Economic Review, Vol. 38, No. 1, March 1948, pp. 122-128; reprinted in Readings in Fiscal Policy, American Economic Association, Illinois, 1955. A comparable measure is that derived by Richard E. Slitor in "The Measurement of Progressivity and Built-in Flexibility", Quarterly Journal of Economics, February 1948, pp. 309-313,

$$m = \frac{\Delta T}{\Delta Y} \dots\dots\dots 1$$

where ΔT = the change in tax yield associated with ΔY , and

Y = the change in income. Thus m is the ratio of the increase in tax yield to its causal change in income, or the marginal rate of tax. (119)

If the tax yield does not change in response to income variations, $m = 0$, and there is no built-in flexibility in the

(118) (cont'd)

who designates flexibility in terms of the ratio of the marginal rate of tax to the effective (average) rate. A measure relating the actual absolute change in tax yield to its causal change in income, similar to that used here, was adopted by M.O. Clement, Review of Economics and Statistics, February 1960, pp. 56-61; and by Joseph A. Pechman, "Yield of the Individual Income Tax During a Recession", in Policies to Combat Depression, pp. 123-146. Leo Cohen, in an elaboration of Pechman's analysis, also justifies the use of this approach: "An Empirical Measurement of the Built-in Flexibility of the Individual Income Tax", American Economic Review (Papers and Proceedings), Vol. XLIX, May 1949, pp. 532-541 (see his footnote on p. 532).

The formulation of built-in flexibility in terms of the ratio of the elasticity of tax yield to that of income change at a given point is well suited to the measurement of the sensitivity of tax liability to changes in income and it is undoubtedly the superior measure for analysing and comparing the properties of given tax schedules. However, the marginal yield approach followed here, which focuses attention on actual tax yield changes in response to income variations, is more appropriate for estimating the regulatory effects of the tax system since the value of flexibility does not depend upon the original tax and income levels.

(119) The term marginal rate of tax as used here is not to be confused with the statutory marginal tax rate. The former relates to the effective rate on changes in total income, whereas the latter refers to the rate applicable to changes in taxable income falling under a specific rate schedule.

Moreover, it is important to note the difference between this measure of built-in flexibility and tax yield elasticity. Using the above notations, the elasticity of tax yield becomes:

$$\frac{\Delta T}{T} \cdot \frac{Y}{\Delta Y}$$

system. If $m = 1$, tax yields show perfect flexibility and any increase in income is completely taxed away.⁽¹²⁰⁾

2. A Measure of Stabilizing Effectiveness

Equation 1 provides an indication of the sensitivity of tax yields to any change in income. It does not, however, show the extent that income is stabilized as a result of this sensitivity in the tax system.⁽¹²¹⁾ For this purpose, another expression is required which can be formulated as:

(120) It is theoretically possible, though highly improbable in practice, for the marginal rate of tax to exceed unity.

(121) A number of writers, including Pechman and Cohen (op. cit.) seem to mistakenly identify built-in flexibility with stabilizing effectiveness. The latter, whose ".... basic purpose is to measure and analyse the quantitative importance of the individual income tax as a built-in stabilizer", restricts his study to tax yield flexibility. The automatic change in tax yield resulting from an income change shows only the initial or first-round impact, and clearly ignores the multiplier effects of the tax change operating through the spending propensities on successive rounds of responding.

$$Z = 1 - \frac{\Delta Y}{\Delta Y_j} \dots\dots\dots 2$$

where ΔY = the change in income that occurs in the system
under study

and ΔY_j = the change in income that would occur if tax yields
were completely insensitive to income changes (no
built-in flexibility).

Hence Z = the fraction of the potential change in income
(ΔY_j) which is prevented by built-in
flexibility. (122)

(122) This formulation of stabilizing effectiveness is similar to that developed by Musgrave and Miller, op. cit., and used by Musgrave in his The Theory of Public Finance, op. cit., pp. 508-509. David W. Lusher, "The Stabilizing Effectiveness of Budget Flexibility", in Policies to Combat Depression, pp. 77-89, makes use of a comparable expression (i.e. his $\frac{Y_2 - Y_{12}}{Y_1 - Y_{12}}$) which, in the denotations adopted above, can be expressed as:

$$\frac{\Delta Y_j - \Delta Y}{\Delta Y_j} \left\{ = 1 - \frac{\Delta Y}{\Delta Y_j} \right\}$$

In Lusher's case, however, the no-flexibility condition is given by assuming a constant effective tax rate whereas Musgrave's definition of zero flexibility and that adopted here involves a fixed level of tax yield. The relation between the two approaches is shown in an appendix to Lusher's article. See also the comments on Lusher's coefficient by A.G. Hart and Melvin I. White, Ibid., pp. 106-114.

Cary Brown (op. cit.) measures stabilizing impact as the difference between the multiplier in the case under study and that which would obtain with tax yields fixed;
i.e. $\frac{\Delta Y_j}{\Delta A} - \frac{\Delta Y}{\Delta A}$, where ΔA is the causal autonomous shift in demand.

Equation 1 provides a general representation of the magnitude of built-in flexibility. Equation 2 provides a measure of stabilizing effectiveness. It remains to show the precise relationship between tax flexibility and automatic stabilization. For this purpose it will be helpful to begin with a simple Keynesian-type expenditure equation where changes in the level of income initiated by some autonomous change in spending can be represented, i.e.

$$\Delta Y = \Delta A + \Delta C + \Delta I \quad \dots\dots\dots 3$$

where ΔY = the change in aggregate income, which is defined as the sum of the income of the personal sector before tax and undistributed profits of the corporate sector before tax

ΔA = an autonomous change in spending by persons, corporate bodies, or government

ΔC = the change in expenditure of persons on goods and services

and ΔI = the change in net investment by corporate bodies.

The expenditure of the public sector does not enter into this formulation in view of the definition of aggregate income and because, for present purposes, public spending is assumed to be held constant.

It is assumed, therefore, that changes can occur in either of the two sectors in this simplified model. Looking at the model from the income aspect, aggregate income can be represented:

$$\Delta Y = \Delta Y_p + \Delta S_b \dots\dots\dots 4$$

where ΔY_p = the change in personal income before tax
and ΔS_b = the change in corporate savings before tax.

If the change in undistributed profits is related to the change in aggregate income, then

$$\Delta S_b = v \Delta Y$$

and the change in personal incomes can be expressed

$$\Delta Y_p = \Delta Y(1 - v)$$

3. The impact of personal income tax yield flexibility

The above disaggregation enables an examination of the flexibility of taxes on the personal sector and its effect on consumption spending in isolation from the forces at work in the corporate sector. Thus equation 1 can be modified to represent the automatic flexibility of taxes on personal income.

$$m' = \frac{\Delta T_p}{\Delta Y_p}$$

where ΔT_p = the change in yield of taxes on personal incomes associated with ΔY_p

and ΔY_p = the change in personal incomes.

Thus m' = the built-in flexibility of personal income taxes (or the marginal rate of tax on personal income).

Following the usual procedure, the change in consumption associated with a change in income is defined as a function of the

change in personal income after tax, i.e.

$$\begin{aligned} \Delta C &= \Delta Y - v \Delta Y - m' (\Delta Y - v \Delta Y) \\ &= c \left[\Delta Y (1 - v) (1 - m') \right] \dots\dots 5 \end{aligned}$$

where c = the marginal propensity to consume out of personal income after tax.

Equation 5 can now be substituted into equation 3. For the time being, investment is considered autonomous, and since it therefore shows no response to other forms of spending it disappears from the equation. Equation 3 thus becomes

$$\begin{aligned} \Delta Y &= \Delta A - c \Delta Y (1 - v) (1 - m') \\ &= \frac{\Delta A}{1 - c(1 - v)(1 - m')} \dots\dots 6 \end{aligned}$$

which indicates the change in income initiated by some autonomous change in spending when only consumption is affected and when the tax yield on personal income is sensitive to income fluctuations.

If, however, the tax yield was completely insensitive to income change, then $m' = 0$, and the resulting change in consumption (equation 5) could be expressed simply as

$$\Delta C_j = c \Delta Y_j (1 - v) \dots\dots\dots 7$$

where ΔY_j and ΔC_j represent the change in aggregate income and consumption respectively when the tax yield is inflexible. Thus the change in aggregate income where tax yields are fixed can be expressed by simplifying equation 6 to

$$\Delta Y_j = \frac{\Delta A}{1 - c(1 - v)} \dots\dots\dots 8$$

Equations 6 and 8 express the change in aggregate income when tax yields are flexible and inflexible respectively. These can now be substituted into equation 2 to give a measure of the stabilizing effectiveness of personal income tax yield flexibility.

$$Z(\text{of } m') = 1 - \frac{\Delta A}{1 - c(1 - v)(1 - m')} \cdot \frac{1 - c(1 - v)}{\Delta A}$$

$$= \frac{cm'(1 - v)}{1 - c(1 - v)(1 - m')} \dots\dots\dots 9$$

This representation points up important implications not only of tax yield sensitivity but also of this form of simple aggregate economic model. First of all, as long as m' is positive, so that tax yields are positively sensitive to income changes (equation 6), the change in aggregate income will be less than where they are inflexible (equation 8). This follows because $1 - c(1 - v)(1 - m') > cm'(1 - v)$ as long as $c(1 - v)$ is less than unity; and so $\Delta Y < \Delta Y_j$. The change in tax yield will be the same regardless of the source of the initial (autonomous) change in spending.

For all intents and purposes, it is impossible for the marginal tax rate to exceed 100 per cent (or $m = 1$), in which case the increase in income would be matched by an equal increase in tax yields (i.e. $\Delta T = \Delta Y$). The upper limit of Z is therefore equal to $c(1 - v)$, and complete stabilization is impossible as long as the marginal propensity to consume is less than one or corporate savings are positive.

If σ and ν are known, equation 9 provides the relationship between the built-in flexibility of the tax system and the extent to which fluctuations in incomes are prevented thereby. Figure 1 indicates that if both these coefficients were constant, the relationship would take the form of a hyperbola, showing that successive increments of built-in flexibility have a decreasing impact on stabilizing effectiveness. The yield flexibility of the personal income tax and hence also its stabilizing effect, will be greater the higher the value of σ and the lower the value for ν .

Regardless of the value for σ and ν , if $m = 0$, meaning that the tax system is completely insensitive to income changes, then $Z = 0$ also (since $\Delta Y = \Delta Y_j$). If m is negative Z also becomes negative and the system is then destabilizing so that any swing in income will be aggravated by tax yield flexibility.

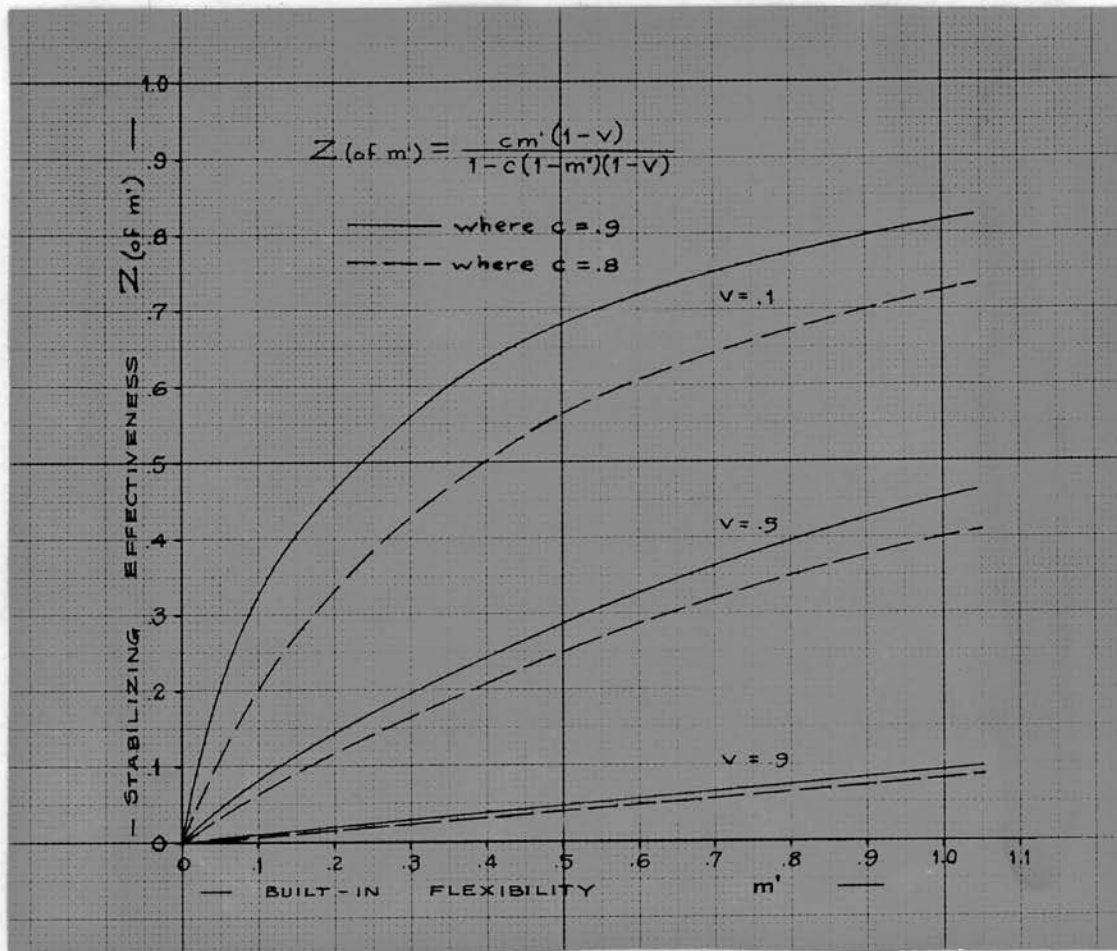


Figure 1: The relationship between the built-in flexibility of taxes on personal incomes and its stabilizing effectiveness.

The impact of corporate tax yield flexibility

The construction of a formulation to show up the implications of yield flexibility of a tax on undistributed profits can be accomplished more quickly, since it follows the same pattern as that outlined for taxes in the personal sector. The flexibility of the corporate tax can be expressed as

$$m'' = \frac{\Delta T_b}{v \Delta Y} \dots\dots\dots 10$$

where ΔT_b = the change in yield of the tax on corporate savings,

and $v \Delta Y$ = ΔS_b , or the share of aggregate income change absorbed by corporate savings.

Hence m'' = the marginal rate of tax on corporate savings, or the built-in flexibility of the corporate tax.

Assuming that corporate net investment is a function of undistributed corporate profits after tax, a change in investment can be represented

$$\Delta I = iv \Delta Y(1 - m'') \dots\dots\dots 11$$

where i = the marginal propensity of corporate bodies to invest net savings. (123)

Isolating the effect of tax changes on investment by holding consumption constant, equation 3 becomes

$$\begin{aligned} \Delta Y &= \Delta A + iv \Delta Y(1 - m'') \\ &= \frac{\Delta A}{1 - iv(1 - m'')} \dots\dots\dots 12 \end{aligned}$$

If, on the other hand, the corporate tax yield was insensitive to income changes, then $m'' = 0$, and equation 11 could be rewritten

$$\Delta I_j = iv \Delta Y_j \dots\dots\dots 13$$

(122) It would make no difference to this part of the theory if investment was related to net retained profits of some earlier period.

and equation 12 becomes

$$\Delta Y_j = \frac{\Delta A}{1 - iv} \dots\dots\dots 14$$

Substituting equations 12 and 14 into equation 2,

$$Z(\text{of } m'') = 1 - \frac{\Delta A}{1 - iv(1 - m'')} \cdot \frac{1 - iv}{\Delta A}$$

$$= \frac{ivm''}{1 - iv(1 - m'')} \dots\dots\dots 15$$

Where Z (of m'') represents the fraction of income change prevented by the tax on corporate savings.

Again, if the upper limit of the marginal rate of tax is 100 per cent (i.e. m'' = 1), the maximum possible value of Z (of m'') is equal to iv, and stabilization can never be complete as long as iv < 1. If m'' = 0, then Z (of m'') is also neutral; if m'' < 0, then the tax is destabilizing. The yield flexibility and stabilizing effect of the undistributed profits tax will be greater the higher the values of i and v.

Combined effect of personal income and undistributed profits tax yield flexibility

It should be noted that the equations for Z (of m') and Z (of m'') are not additive. Thus equation 3 must now be considered in its entirety to show the effect on aggregate income change of both personal and corporate tax sensitivity, i.e.

$$\Delta Y = \Delta A + \Delta C + \Delta I$$

Substituting equations 5 and 11 into this equation gives a representation of the change in aggregate income in the presence of both personal and corporate tax flexibility.

$$\begin{aligned} \Delta Y &= \Delta A + c \Delta Y(1 - v)(1 - m') + iv \Delta Y(1 - m'') \\ &= \frac{\Delta A}{1 - c(1 - v)(1 - m') - iv(1 - m'')} \dots\dots\dots 16 \end{aligned}$$

The condition of no flexibility in the tax yield is represented by introducing equations 7 and 13 into equation 3. Thus

$$\begin{aligned} \Delta Y_j &= \Delta A + c \Delta Y_j(1 - v) + iv \Delta Y_j \\ &= \frac{\Delta A}{1 - c(1 - v) - iv} \dots\dots\dots 17 \end{aligned}$$

The fraction of potential income change prevented by flexibility in the tax system (the measure of stabilizing effectiveness) for both sectors, is therefore

$$\begin{aligned} Z(\text{of } m' + m'') &= \frac{\Delta A}{1 - c(1 - v)(1 - m') - iv(1 - m'')} \cdot \frac{1 - c(1 - v) - iv}{\Delta A} \\ &= \frac{cm'(1 - v) + m''iv}{1 - c(1 - v)(1 - m') - iv(1 - m'')} \dots\dots\dots 18 \end{aligned}$$

Some final conclusions can be drawn from equation 18. If the maximum marginal rates of tax on both personal income and undistributed profits is 100 per cent (i.e. $m' + m'' = 2$), then the upper limit to the fraction of potential income change prevented by tax flexibility is equal to $c(1 - v) + iv$. Stabilization can never be complete as long as c and i are both less than unity. Moreover, suppose $m'' > m'$. If c and i were equal, then stabilization would be greater the larger the value of v . If $m' > m''$, stabilization would be inversely related to v . Finally, if $m' = m''$, and $c > i$, stabilization will be greater the lower the value of v .

As does most economic theory, the above system of relationships leaves itself open to criticism through over-simplification. The equations dealing with changes in the personal sector are relatively reliable since they involve only well-accepted propositions pertaining to the relations between disposable income and consumption spending. Nevertheless, no explicit account is taken of possible (or probable) shifts in the distribution of incomes or in the propensity to spend. There is more room for criticism in the approach to adjustments in the corporate sector, especially in the assumption that corporate net investment is a simple function of undistributed profits after tax. Certainly, the relationship between disposable income and spending is much less predictable in the corporate than in the personal sector. In depression, particularly, a higher proportion of profits retained as a result of lower taxes may not necessarily induce investment. Indeed, unless corporate liquidity is the governing factor, the importance of the movements in the tax base (profits) may well obscure the behavioural effects of adjustments through tax changes.

Moreover, the analysis abstracts from all non-fiscal influences such as monetary changes and adjustments in private spending which may result from changes in liquid asset holdings arising out of a budget surplus or deficit. If changes in the budget balance are reflected in changes in the money supply, the automatic fiscal impact may be considerably increased. If they are reflected in changes in the public debt, the effect may be reduced. ⁽¹²⁴⁾

(124) See Milton Friedman, "A Monetary and Fiscal Framework for Economic Stability", op. cit.

CHAPTER V

AN EMPIRICAL ESTIMATE OF THE AUTOMATIC YIELD FLEXIBILITY OF THE BRITISH INCOME TAX SYSTEM AND OF ITS STABILIZING EFFECT

"Built-in stabilizers' have received less attention in Britain than in the U.S.A. But their potentialities might well be investigated further in order to determine whether some extension or strengthening would be desirable."

(Thomas Wilson, Inflation)

Chapter III consisted of an examination of the major flexible devices in the fiscal structure of the United Kingdom. In the course of that discussion it emerged that direct taxes on personal and corporate income are likely to provide a large share of the total built-in flexibility in the economy. In Chapter IV a system of relationships was formulated which provides a means of evaluating built-in flexibility and its impact on economic fluctuations. It is the purpose of the present chapter to give statistically determined values to the necessary variables in order to quantify empirically the built-in flexibility of the taxes on income and profits. It will then be possible to make at least a first approximation of the compensating effect of this measured flexibility.

The analysis begins by deriving the built-in flexibility of taxes on personal incomes (the measure m' in the preceding theoretical discussion). This is accomplished by examining the way in which personal tax yields change in response to changes in the level of personal income, assuming the relative distribution of personal

incomes remains constant. Similarly, the marginal rate of tax on changes in corporate savings is determined (giving the measure m'').

In order that the effects of these two flexibility components on changes in aggregate income can be examined, the expected distribution of aggregate income changes between personal income and corporate savings is determined by a statistical examination of historical data. This involves the construction of an equation to give the values of the coefficient v for given changes in aggregate income.

Changes in aggregate income above and below the level actually prevailing in 1959 are then postulated, representing depression and inflation in varying degrees. The built-in flexibility of direct tax yields is then predicted for each case, using the values for v , m' and m'' determined by empirical analysis. Using values for the marginal propensity of the personal sector to consume, c , and of firms to invest, i , the stabilizing effect of tax flexibility is estimated.

1. Built-in Flexibility: A. Taxes on Personal Income

The sensitivity of taxes on personal income (income tax, plus surtax) to changes in the level of personal income was determined in the following manner. Personal income (Y_p) was defined as the total of personal income allocable by income ranges. The 1959 level of personal income thus defined, and its distribution among fifteen income brackets, is available in official statistics

and provides the base on which tax yield changes can be calculated. (125)

In order to establish the way in which the marginal effective rate of tax (or m') varies in response to the level of personal income, five other levels of personal income, two below and three above the 1959 level, were postulated. These "alternative" levels of personal income were then distributed over the fifteen income ranges maintaining the same relative distribution of incomes as prevailed in 1959. The 1959 effective tax rate on each income bracket was then applied to the corresponding brackets throughout, giving the total tax payable, for each level of personal income, at 1959 effective rates. (126)

(125) National Income and Expenditure 1960, Table 22. Income allocable by income brackets excludes some forms of income which enter into the figures for total income of the personal sector (ibid. Table 2), such as investment income of non-profit making bodies and of life insurance and superannuation funds; employers' contributions to national insurance and pension schemes; any parts of employees' income including national insurance contributions that are deductible for income tax purposes; most income in kind; accrued interest on National Savings Certificates; dividends on co-operative societies; some grants to persons from public authorities; the excess of imputed income from owner-occupied dwellings over Schedule A valuations; depreciation allowances deducted from the trading and professional incomes of persons; any other differences between the incomes shown in the Inland Revenue returns and the corresponding estimates included in personal income; certain non-taxable grants from public authorities; post-war credits; and incomes of persons receiving less than £50 a year. On the other hand, certain pensions derived from private superannuation schemes are included, although excluded from the total of personal incomes. For a more detailed outline of the differences between these figures, see ibid. pp. 68-69, and Sources and Methods, pp. 69-70. Income classifiable by income ranges represented 83.4 per cent of total income of the personal sector in 1959.

(126) The procedure followed in this calculation is outlined in Appendix I.

From the figures of total personal income and total tax payable, the effective (average) rates of tax on personal income were calculated for the five alternative income levels and for 1959. The ratio of the difference between the level of personal income for 1959 and that of each alternative, and the corresponding difference in tax yields, gave the marginal rate of tax for each postulated income change. These average and marginal rates of tax are plotted on a scale of income in Figure 2 to show their trend over the range of income being considered. A least-squares regression line was calculated and plotted through the series of marginal rates in order to eliminate the random variations from the trend resulting from the difficulty of reading large numbers on a logarithmic scale. (127)

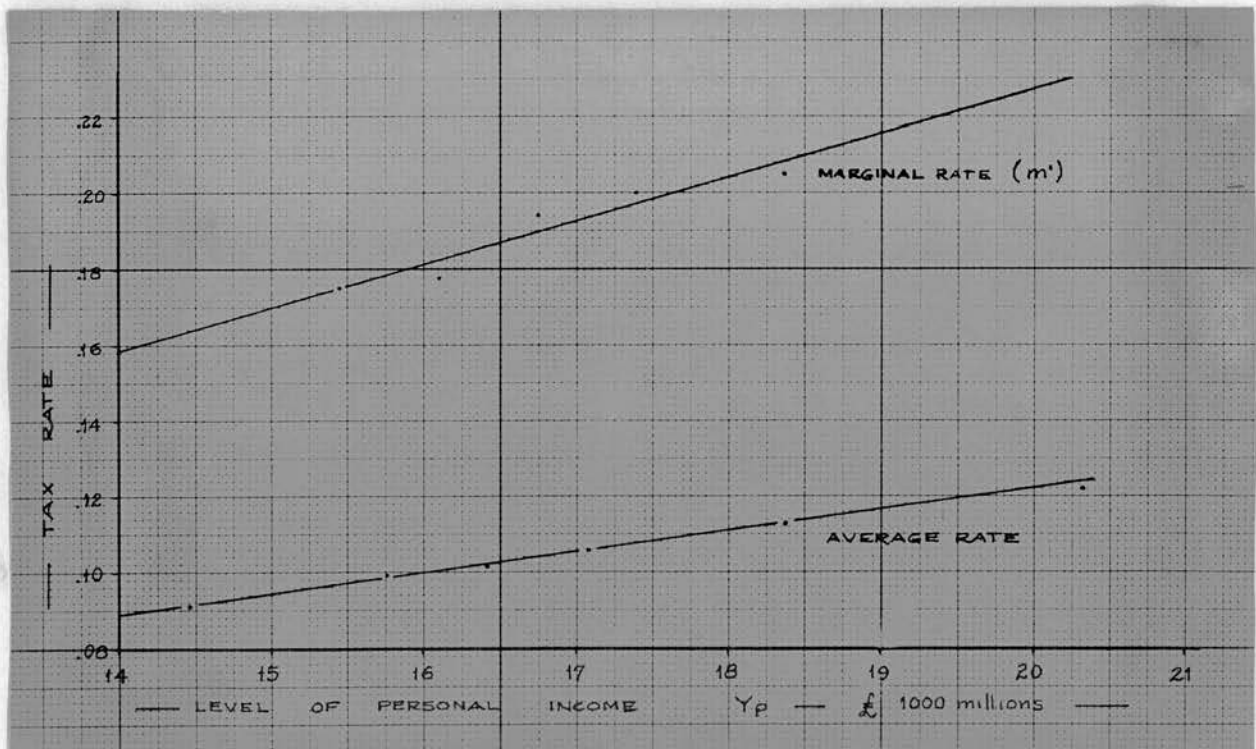


Figure 2: The trend of marginal and average tax rates on personal income

(127) I.e. Appendix I, Chart A.

The linear regression of built-in flexibility m' (or the marginal rate of tax expressed as a fraction) on the level of personal income, Y_p , gives an equation

$$m' = .0413 Y_p \dots\dots\dots 19$$

where personal income is expressed in milliards of pounds. (128)

This method of assessing the built-in flexibility of personal income tax yield involves a number of assumptions. (129) Perhaps

(128) The square of the coefficient of correlation (r^2) is very high: .918. Its divergence from unity can be expected to arise from errors in reading figures from the cumulative income distribution chart. The regression calculation produces a constant parameter of .0007, but since Y_p is expressed here in thousand millions, the constant is negligible. Over very wide changes in Y_p the relationship is unlikely to be a straight line and, since tax yields become positive only when some incomes exceed the exemption limit, the intercept must be negative. In any event, the determination of the intercept involved an extrapolation which can hardly be considered reliable in view of the range of values calculated.

(129) Most other assessments of the magnitude of personal income tax yield flexibility, such as those of Pechman, Cohen and Clement, op. cit., have consisted of an analysis of actual changes in tax yields associated with actual changes in personal income over an historical period, with due corrections for any changes made to the tax code during the period. All these analyses have dealt with the federal tax structure in the United States. Quite apart from the greater availability of relevant American figures and statistics, the distaste for discretionary changes in the United States has left the tax structure comparatively constant, which facilitates an examination through time of the extent to which the tax system responds to income changes. In Britain, much more significant changes have been made to the tax schedule in recent years. Further complications present themselves in connection with the application of a single income tax on both personal and corporate incomes which in turn is complicated by frequently-changed special depreciation allowances. Any attempt to correct personal income tax yields over a period of years to what they would have been had the tax code remained fixed is therefore open to considerable error. In addition, there has been substantial change in the pattern of taxable income distribution over the years. For present purposes, it was considered

(cont'd p. 124)

the most contestable is that concerning the constancy of the pattern of income distribution. Although this problem has been considered by a number of investigators, the pattern of change in income distribution during economic fluctuations has not been conclusively proven. During a depression the receipts of high income groups may be expected to fall more than the average because of their heavy dependence on profits. On the other hand, the total income from wages, which is concentrated in the lower income brackets, can be expected to fall off because of unemployment. There are, of course, a large number of other considerations regarding possible structural changes during economic fluctuations, such as rigidities in wages and salaries, changes in the number of income receivers, and the offsetting effect of unemployment benefits. Conflicting empirical evidence arises from differences in the form of basic data employed. (130)

Secondly, because the statutory increments of tax progression vary with individual circumstances, and coincide only randomly with the fifteen income brackets used in this analysis, the application of 1959 effective rates for each income bracket subsumes a constant average income within each income bracket. Clearly, the error

(129) (cont'd)

preferable to isolate the magnitude of built-in flexibility of the tax system from the influence of gradual income redistribution over time. The present analysis, therefore, aims at an estimate of the sensitivity of taxes on personal incomes at the rates and allowances applicable in 1959 (the latest year for which statistics are available) in order to show its reaction to short term income fluctuations assuming that no income redistribution takes place.

(130) See H. Mendershausen, Changes in Income Distribution During the Great Depression, N.B.E.R., Studies in Income and Wealth, Vol. 7, New York, 1946; and Thomas Wilson, Inflation, Basil Blackwell, Oxford, 1961, especially Chapter IV.

arising out of this simplification depends upon the size of the income increments of the brackets. Significantly, the size of the brackets used in this analysis is largest toward the upper end of the income scale where tax rates are highest and hence the error in the calculated tax paid is greatest. On the other hand, the amount of income involved (and to a lesser extent the tax payable) tapers off toward the top brackets so that the total error involved is not as great as it would otherwise be.

Finally, since earned and unearned income is taxed at different rates, the proportion of unearned income, and its distribution over the income range, is assumed to remain unchanged. The number of dependents, and other circumstances which affect taxpayers' income, and their distribution through the income range, is also assumed to remain constant. The personal circumstances of taxpayers are obviously fairly fixed in the short period. The acceptability of this assumption therefore depends upon the time period involved, which for present purposes can almost certainly be considered short enough to justify the postulation of fixed family and other personal circumstances. The constancy in the proportion of unearned income is more questionable. Unearned income which depends directly on profits may be expected to fluctuate widely, but these fluctuations will tend to be offset by the more stable receipts from fixed interest, rents, and other annuities. In the short run, the distribution of unearned income over the income range may reasonably be expected to remain unchanged, though this conclusion in turn would be strictly valid only if there were a constant proportionality between 'stable' and 'unstable' unearned income throughout the range of unearned income receivers.

2. Built-in Flexibility: B. Taxes on Corporate Income

The built-in flexibility of the taxes on corporate income can be determined more readily and with at least equal reliability. The purpose is to estimate the way in which changes in corporate income influence the yield of profits tax plus income tax on corporate profits excluding that part of income tax falling on distributed profits (which is credited to personal income tax payments).

The 1959-60 level of profits tax was fixed at 10 per cent for all profits, whether distributed or undistributed, and was not deductible for income tax purposes. The standard rate of income tax, which is also payable by corporate bodies on undistributed profits, was seven shillings and nine pence in the pound, or 38.75 per cent. The Inland Revenue reports show that over the past nine years, at least, the proportion of taxable profits which were not distributed has remained remarkably close to an average of 74.6 per cent.⁽¹³¹⁾ Therefore, assuming this share of undistributed profits is constant, and combining profits tax and income tax liabilities, corporate bodies bear the equivalent of a

(131) Between the years 1949-50 and 1957-58 inclusive the variation from this average was plus 2.4 per cent (to 77.0 per cent in 1951-52) to minus 1.8 per cent (to 72.8 per cent in 1957-58). These figures were calculated from the 97th, 102nd and 103rd Inland Revenue Reports, Tables 78, 77 and 81 respectively, which refer to the profits tax charges against distributed and undistributed profits. Although some exemptions are allowable against profits for profits tax purposes and taxable profits are not identical with commercial profits, these qualifications affect only the total amount of profits and do not alter the proportion between distributed and undistributed profits.

proportional tax on undistributed profits of 52.15 per cent. (132)

Since the tax can be considered proportional, the marginal rate is equal to the effective average rate, and the built-in flexibility measure (which is the marginal rate expressed as a fraction) is therefore constant. Thus

$$m^* = 0.5215 \quad \dots\dots\dots 20$$

Again, important assumptions are implicit in this conclusion. Firstly, it is assumed that retained corporate income bears the burden of all taxes on profits except that part of income tax which is attributable to distributions. The theory of tax incidence suggests that this is far too simple a conclusion since it ignores not only the involved problems of tax shifting but also the way in which distributions are influenced by taxation. This latter consideration takes on particular importance in view of the possibility of differences in the rate of tax on distributed profits provided for under the system of rebates payable to receivers of dividends whose marginal statutory liability is less than the standard rate. Furthermore, the allocation of the full weight of profits tax to undistributed profits oversimplifies the real situation since this tax directly influences the amount of disposable profits and hence also the volume of distributions. Nevertheless, the importance of these qualifications is reduced as

(132) I.e. 38.75 per cent income tax plus 10 per cent profits tax on all profits (or 13.40 per cent on the undistributed portion). It should be noted that in practice the calculation of corporate income for income tax and profits tax is not exactly identical, and certain abatements apply on small incomes in the case of profits tax. These differences are not accounted for here but it is doubtful if they would appreciably affect the total result.

long as the analysis is concerned with a fixed rate of proportional tax liability, so that changes in tax yield arise from changes in the amount of income rather than changes in the effective rate of the tax (i.e. substitution effects are less complicated) and as long as the immediate concern is not with incidence but merely with changes in tax yield.

The assumption regarding the constancy in the proportion of profits distributed also requires some qualification. Although the experience of the last decade justifies this simplification it does not necessarily follow that such constant proportionality will hold during future economic fluctuations. The last ten years were marked by considerable swings in the level of corporate profits but they contained no examples of either sharp depression or severe inflation. Moreover, a constant proportionality between distributed and retained profits conflicts with any tendency for firms to maintain dividend distributions through periods of fluctuating profits.⁽¹³³⁾ It is likely that the validity of this assumption is weakened the greater the fluctuations in income under consideration.

3. The Distribution of Changes in Aggregate Income Between the Personal and Corporate Sectors

Before any estimate of the impact of tax yield flexibility can be attempted, it is necessary to ascertain the way in which aggregate income fluctuations are to be apportioned between personal income

(133) However, there appears to be limited to this tendency. The decline in taxable profits between 1957-58 and 1958-59 was accompanied by an even greater fall in distributions. Ibid.

and retained corporate profits. As the theoretical discussion in the preceding chapter indicates, this distribution of income changes has important implications for the stabilizing effect of tax yield changes as long as the marginal rate of tax or the propensity to spend differs between the personal and corporate sectors. The present purpose is therefore to determine the share of aggregate income changes which are attributable to retained corporate profits. This was referred to earlier as the coefficient v .

Toward this end, the actual figures for personal income, corporate savings, and aggregate income - according to the definitions used in this analysis - were calculated for each year of the decade ending in 1959. ⁽¹³⁴⁾

The changes in corporate savings between each pair of years was then plotted against the associated change in aggregate income as shown in Figure 3. A calculation of a least-squares regression line through these values suggests that changes in corporate savings,

(134) See Appendix II. The calculation of the share of undistributed profits in aggregate income changes (i.e. the coefficient v) serves not only to determine the amount of personal income (as a residual) but also to find the amount on which corporate bodies pay tax. In theory no conflict arises between these two purposes. In practice, however, the calculated undistributed profits do not reflect exactly the figure needed for the second purpose because of special depreciation allowances for tax purposes which have changed over the period. The depreciation figures used in Appendix II are the National Income estimates of capital consumption for each year; which can be expected to approximate more closely to the depreciation allowances that would have obtained if the provisions had been held constant over the period.

ΔS_b , are related to changes in aggregate income ΔY , according to the equation (135)

$$\Delta S_b = - 715.52 + .910 \Delta Y$$

by definition, $v = \frac{\Delta S_b}{\Delta Y}$

so the above equation can be recast in terms of v:

$$v = .910 - \frac{715.5}{\Delta Y} \dots\dots\dots 21$$

This relationship bears interesting implications. It implies that the change in undistributed profits will be negative unless the increase in aggregate income exceeds £786 millions. (136) For any increase less than this, a positive marginal tax rate (m") on retained profits means that corporate tax yields will fall. Thus, when the increase in aggregate income is small, corporate tax yield flexibility is destabilizing.

On the other hand, personal income continues to increase through depression (defining depression as a decline in aggregate income) unless the fall in aggregate income reaches exceedingly high proportions; namely, a fall of nearly £8000 millions. (137) Therefore, as long as the marginal rate of tax on personal income (m') is positive, for any fall in income less than this amount the yield of personal income taxes will increase. Hence the tax is compensating during a rise in aggregate income but is destabilizing during a downswing, unless the fall in aggregate income is of very severe proportions.

(135) The coefficient of correlation squared (r^2) is .930.
(136) I.e., where $\Delta S_b = 0$, $\Delta Y = 786.1$. This is 4.23 per cent of the 1959 level of aggregate income.
(137) More precisely, £7950 millions (i.e. $\Delta S_b = \Delta Y$ where $\Delta Y = - 7950$). This is 42.76 per cent of the 1959 level of aggregate income.

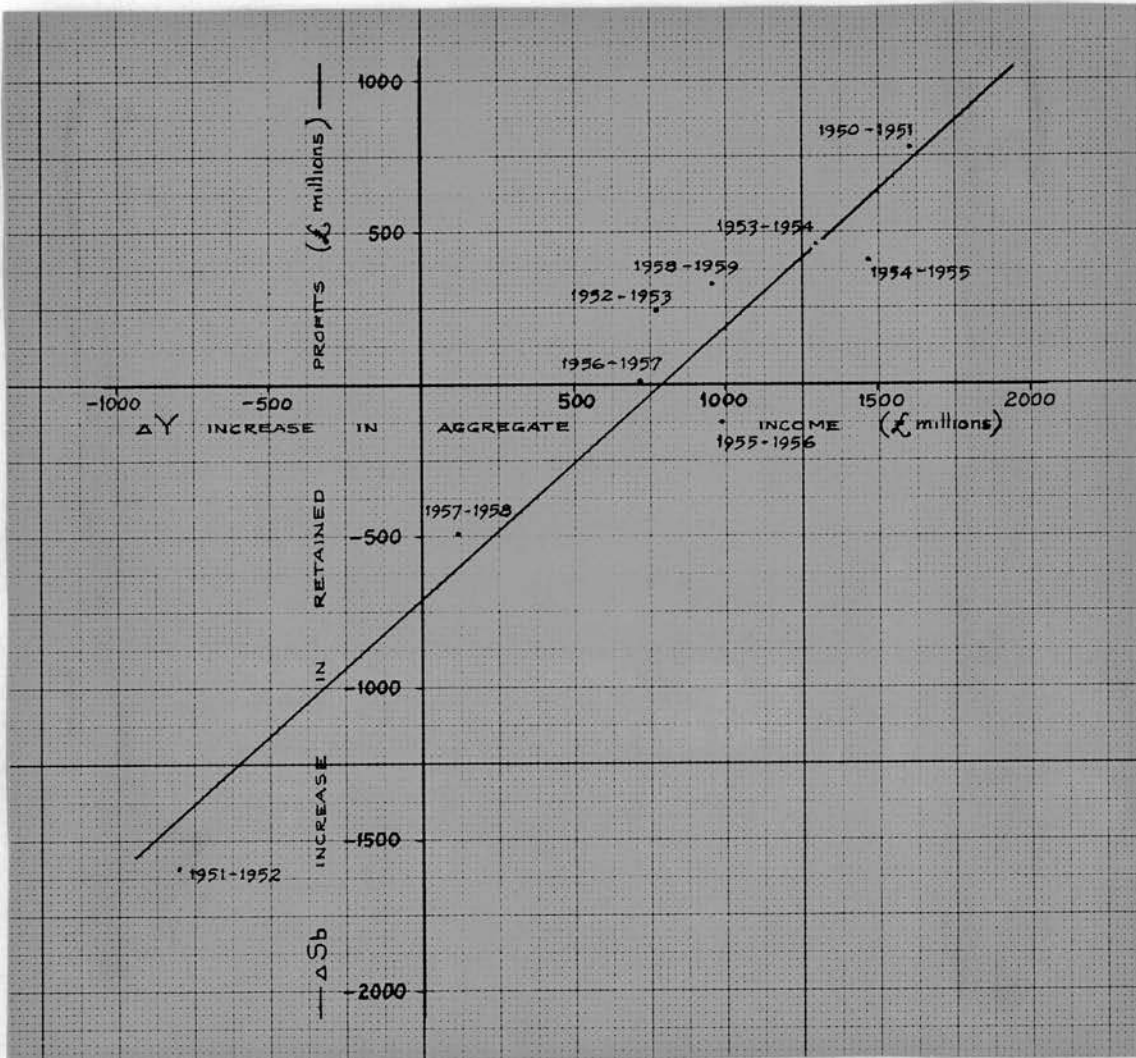


Figure 3: The relationship between increases in retained profits and increases in aggregate income

4. The Stabilizing Impact of Income and Profits Tax Flexibility

This section is concerned with the extent to which the automatic changes in direct tax yields examined above affect fluctuations in

aggregate income.⁽¹³⁸⁾ The approach adopted consists in postulating a variety of changes in aggregate income above and below the actual 1959 level, representing different degrees of inflation (increases in aggregate money income) and depression (decreases in aggregate money income). These changes are allocated between personal income and undistributed profits according to Equation 21. Using values for the automatic tax flexibility coefficients m' and m'' provided by equations 19 and 20, and approximate values for the marginal spending coefficients, the stabilizing effectiveness, Z , is then calculated according to equations 9, 15 and 18.

It is assumed that spending behaviour in the personal sector is governed by personal income after tax payments, and that all taxes are paid on a pay-as-you-earn basis. For the corporate sector tax accruals are assumed to be the governing determinant. These assumptions, while being perhaps the most realistic simplifications, eliminate the complications of time lags between accruals and payments.

Since the analysis is based on a static model, the time period involved in adjustment is taken to be the length of time required for the multiplier effects of an income change to work themselves out. In fact, there are likely to be differences in lags depending upon the distribution of income changes and upon the direction of the fiscal change.⁽¹³⁹⁾ It is further assumed that no other changes

(138) Aggregate income continues to refer to the sum of personal income as defined earlier (footnote 125) and undistributed profits of corporate bodies. It differs from total private income to the extent that the income of public corporations is included. It consists, therefore, of all income directly liable to income taxes.

(139) See, for example, L.R. Klein, et al., An Econometric Model of the United Kingdom, Basil Blackwell, Oxford, 1961.

take place during the period involved.

Four changes in aggregate income around the actual 1959 level are considered, namely:

Case 1: mild recession, marked by a five per cent fall in aggregate income. Incidentally, this compares with the decline of 6.1 per cent between 1951 and 1952, the only year during the last decade that aggregate income actually fell (see Appendix II)

Case 2: depression, characterized by a fifteen per cent fall in aggregate income

Case 3: mild inflation, marked by a five per cent rise in aggregate income. This is slightly less than the increase experienced between 1958 and 1959 (*viz.* 5.4 per cent)

Case 4: inflation, a fifteen per cent increase in aggregate income. This compares with the actual rise between 1950 and 1951 of 14.0 per cent.

Table 1 shows the actual 1959 levels of aggregate income, Y , undistributed corporate profits, S_p , and personal income Y_p , as defined earlier. The four postulated changes in aggregate income are also shown, apportioned between the corporate and personal sectors according to equation 21.

TABLE 1

The distribution of postulated aggregate income changes between the corporate and personal sectors

	1959 (actual)*	Case 1 (- 5%)	Case 2 (- 15%)	(£ million)	
				Case 3 (+ 5%)	Case 4 (+ 15%)
Y	18,593	17,663	15,804	19,523	21,382
Sb**	2,178	616	- 1,077	2,309	3,999
Yp***	16,415	17,047	16,881	17,214	17,383

- * Figures from Appendix II
- ** Where $S_b = S_b \text{ in } 1959 + v \Delta Y$
- *** Where $Y_p = Y - S_b$

The impact of personal income tax flexibility

An estimate of the stabilizing effect of built-in flexibility of personal income tax yields requires a measure of the way personal consumption is influenced by changes in personal income after tax. For present purposes the marginal propensity to consume (c) for each postulated change in income is derived from the equation

$$c = \left[.64 \Delta(Y_p - T_p) + .36 C_{t-1} \right] \div \Delta(Y_p - T_p) \dots\dots\dots 22$$

where $\Delta(Y_p - T_p)$ = the change in personal income
net of tax

and ΔC_{t-1} = the change in consumption in the
previous period⁽¹⁴⁰⁾

(140) This is a simplification of the equation for changes in the expenditure of households developed by Richard Stone and D.A. Rowe, "Aggregate Consumption and Investment Functions for the Household Sector Considered in the Light of British Experience", Nationalökonomisk Tidskrift, Vol. 94, 1956, pp. 1 - 32.

This gives a highly simplified marginal consumption coefficient and ignores many important factors, such as the distribution of personal income changes and rates of adjustment. Nevertheless, it may be considered a satisfactory approximation for present purposes.

Table 2 shows the calculated stabilizing impact of automatic personal income tax flexibility for each of four postulated changes in aggregate income. In a mild depression (Case 1), the increase in personal income and a high marginal propensity to consume cause the changes in personal tax yield to aggravate the fall in aggregate income: the decline would have been 8.9 per cent less had personal tax yields not increased. The smaller increase in personal income in the more pronounced depression (Case 2), more than offsets the higher marginal propensity to consume and the destabilizing effect is reduced to 3.4 per cent.

(140) (cont'd)

The equation used here is adapted from Stone and Rowe's equation 69 (p. 24). It is simplified here to the extent that prices are assumed constant and no distinction is made between consumption and investment in consumer durables.

Stone and Rowe's definition of personal disposable income excludes income tax paid and national insurance contributions but it includes some items which do not enter into $(Y_p - T_p)$ as defined above (see footnote 11). The changes in these other items, however, are likely to be relatively small.

As the authors indicate, the function can be significantly improved by subdividing income into two income groups, and the equation embodying this refinement is tested in their article with very good results.

Table 2

The stabilizing impact of personal income tax flexibility, Z (of m'), for each postulated change in aggregate income

	m'	v	o	Z (of m')
Case 1	.193	1.697	1.092	- .089
Case 2	.191	1.167	1.252	- .034
Case 3	.194	0.141	.999	.540
Case 4	.196	0.653	.937	.086

where $m' = .0113 Y_p$ (equation 19)

$v = .910 + \frac{715.5}{\Delta Y}$ (equation 21)

$o = \left[.64 \Delta (Y_p - T_p) + .36 \Delta C_{t-1} \right] \div \Delta (Y_p - T_p)$ (equation 22)

$Z \text{ (of } m') = \frac{om' (1 - v)}{1 - o(1 - v)(1 - m')}$ (equation 9)

The most remarkable result is that obtained for Case 3, the postulated mild inflation which is fairly typical of the increases in aggregate income during the last decade. Most of the increase in aggregate income is attributable to personal income and the resulting increase in personal tax yields is sufficient to reduce the amplitude of the fluctuation to less than one half of what it would otherwise be. Finally, in the inflation case (Case 4) the increase in undistributed profits is almost twice that of personal income, and the increase in personal tax yield reduced the potential fluctuation by only 8.6 per cent.

The impact of corporate tax flexibility

At this point, the empirical analysis becomes far more speculative. An estimate of the stabilizing effect of corporate tax yield flexibility

is much more imprecise since it is necessary to draw some simple relationship between changes in undistributed profits after tax and changes in investment spending. It is well known that there is no clear-cut relationship between these two variables, and that there are other exogenous factors, such as business expectations, which may be more important than corporate liquidity in influencing investment, particularly during a depression. Nevertheless, for want of a more realistic yet necessarily simple coefficient, it is assumed here that the marginal propensity for corporate bodies to invest disposable retained profits is constant at alternatively .2 and .4. These values are at best in the right order of magnitude and at worst merely arbitrary numbers serving to complete the illustration of the theoretical relationships of Chapter V. (141)

Table 3 shows the stabilizing effect of corporate tax yield flexibility calculated on the basis of these alternative values for the investment coefficient.

(141) A calculation of the ratios of the annual increases in net corporate investment to the changes in corporate savings after tax for the decade 1950-1959 is little help in establishing a reasonable estimate for the marginal investment coefficient. Little more can be said than that net investment and disposable profits tend, more often than not, to move in the same direction. Incidentally, the correlation is not obviously improved by making investment a lagged function of retained profits.

TABLE 3

The stabilizing impact of corporate tax yield flexibility for each Case

	m ⁿ	v	Z (of m ⁿ)	
			where i = .2	where i = .4
Case 1	.5215	1.679	.209	.516
Case 2	.5215	1.167	.137	.313
Case 3	.5215	0.141	.015	.031
Case 4	.5215	0.653	.073	.156

where mⁿ = .5215 (equation 20)

v = .910 - $\frac{715.5}{\Delta Y}$ (equation 21)

Z (of mⁿ) = $\frac{ivm^n}{1 - iv(1 - m^n)}$ (equation 15)

The effect of yield flexibility in undistributed profits tax examined in isolation contrasts sharply with Table 2 because the flexibility parameter is constant at a much higher level, the swings in income are relatively greater, and the spending coefficients are much smaller.

In the recession case corporate tax flexibility prevents a substantial proportion of the potential fall in aggregate income because the much sharper fall in retained profits results in a marked reduction in corporate tax yields. This offset is reduced in the more pronounced depression case since the fall in undistributed profits is smaller in relation to the decline in aggregate income. In a stronger inflation the compensating effect is increased since a

larger share of the total change is attributable to undistributed profits. In all cases, the change in corporate tax yields is in a compensating direction, (though equation 21 shows that it would be destabilizing for declines of less than 4.23 per cent).⁽¹⁴²⁾

The impact of personal and corporate tax flexibility combined

The effects of yield flexibility of the taxes on the two sectors have been shown separately not only to illustrate their differences in impact but also because the estimate for the corporate sector is much less reliable than that for the personal sector. The total impact of direct tax yield flexibility in both sectors, Z (of m' and m''), calculated using the coefficients given in Tables 2 and 3, is shown in Table 4.

TABLE 4

Combined impact of personal and corporate income tax yield flexibility

	Z (of m' + m'')	
	where i = .2	where i = .4
Case 1	.023	.163
Case 2	.078	.215
Case 3	.615	.697
Case 4	.195	.326

$$\text{where } Z \text{ (of } m' + m'') = \frac{cm' (1-v) + m'' iv}{1 - c (1 - v)(1 - m') - iv (1 - m'')} \quad (\text{equation 18})$$

(142) See footnote 136, p. 130.

Combining the assumptions made for both the personal and corporate sectors, the over-all swings in tax yields are compensating in every case. With a small investment coefficient the effect during a decline is small, but a larger coefficient leads to a substantial compensating impact. In the case of an increase in aggregate income of five per cent the fluctuation would be roughly three times as great had tax yields been inflexible. This is due substantially to changes in the yield of taxes on the personal sector. In a sharper inflation the offset is reduced because a larger share of the total income increase goes to the corporate sector which has a lower propensity to spend.

CHAPTER VI

SUMMARY OF RESULTS AND CONCLUDING REMARKS

"It would be far better that the economist should take a sardonic pleasure in shocking the practical man by the brutal frankness with which he sets out his assumptions - consoling himself for the disgust that this conduct will inspire by his own conviction that he is approaching the problem that has been set to him by the only route along which there is even a chance of finding the answer."

(Jean Robinson, The Economics of Imperfect Competition)

The theory and calculations of the last two chapters must be interpreted with care. In this final chapter a summary of the results of Chapter V will be followed by some general concluding remarks on the limitations of the method adopted.

The built-in flexibility of personal income tax yield has been calculated in terms of the ratio of the money change in tax receipts associated with a money change in the level of personal income. Since this in fact reflects the marginal rate of tax on personal income, and given the progressive personal tax structure, the built-in flexibility of this tax has been found to increase as the level of personal income increases. The yield flexibility of taxes on retained corporate profits has been similarly evaluated and shown to be a constant proportion of the tax base (i.e. undistributed profits).

Using calculated values for the consumption coefficient and a derived relationship to give the division of aggregate income changes

between the personal and corporate sectors, the stabilizing impact of flexibility in the yield of personal income taxes (at 1959 rates) has been empirically determined with a fair degree of precision. It emerges that these taxes are slightly destabilizing during a depression (except in an extreme decline) since personal income and hence tax yields tend to continue to rise during a fall in aggregate income. In the case of sharp inflation their stabilizing effect is limited because a relatively small share of the aggregate income increase is attributable to the personal sector. However, in a mild inflation, not untypical of the increases in income experienced during the last decade, the rise in aggregate income might be more than twice as great in the absence of personal tax yield flexibility.

A much less precise calculation has been made of the stabilizing effect of corporate tax sensitivity, using alternative coefficients for the tendency for corporate bodies to invest undistributed profits. The impact is greatest during a decline, when the fall in retained profits exceeds the decline in aggregate income.

Combining the impact of both personal and corporate tax yield flexibility, the stabilizing effect in depression is small unless firms have a high propensity to invest retained profits. In the case of a small rise in aggregate incomes, however, roughly two-thirds of the potential fluctuation is stabilized. For sharper increases in income the compensatory effect is reduced because a relatively larger share of the aggregate increase is attributable to the corporate sector which is likely to show a lower marginal propensity to spend, and because the consumption coefficient of the personal sector declines with greater increases in income.

As is the case with most such analyses, the method incorporates a considerable number of simplifying assumptions, most of which were outlined in the course of the discussion. The dependability of the results therefore depends upon the tenability of the assumptions; and although in each case the assumption made was chosen as the most realistic or reasonable simplification, there are nevertheless other possibilities that could have been adopted. Indeed, the entire conceptual framework could have been formulated in a different way. Built-in flexibility, for example, might have been expressed, as other authors have suggested, as the degree to which a given device contributes to a divergence from a constant proportionality between government revenue and national income. Such alternatives would alter the conceptual formulation of the problem but they would not necessarily affect the precision of the results.

There are other assumptions, however, which do affect the empirical measurements, and of particular importance are those in connection with the spending coefficients. Since it has not been the object of this analysis to quantify propensities, the most satisfactory consumption relationship available was borrowed from other investigators; but this in turn incorporated a good measure of simplification. More seriously, the method requires a coefficient which reflects the propensity of firms to invest. The lack of any reliable investment coefficient is the most unfortunate shortcoming of the whole analysis, but one which is common with investigations of this sort. This difficulty has been dealt with, albeit inadequately, by adopting two more or less arbitrary values for the investment coefficient.

Primarily because of this problem, the results of Chapter V are on two distinct levels of reliability. The measure of built-in flexibility of personal income tax receipts can be considered fairly precise and its impact on consumption spending (involving the introduction of the consumption coefficient) slightly less so. Similarly, the derivation of corporate tax yield flexibility is too simple to leave room for serious error. In addition, the apportionment of aggregate income changes between the two sectors is supported by a high statistical correlation.

The serious imprecision arises in relating changes in disposable corporate income to corporate spending. Thus the impact of corporate tax flexibility on economic flexibility cannot be considered reliable. For this reason, forces operating through the two sectors have been presented separately.

The empirical analysis has been restricted to the effects working through the taxes on income and profits only. It must be remembered that this represents only a part - though probably the largest part - of the whole gamut of automatic fiscal stabilizers outlined in Chapter III.

The flexibility of indirect taxes and transfers, and their regulatory effect could be examined and quantified using the same tools as have been employed in this analysis. This would comprise a logical extension of the present investigation. However, indirect taxes, particularly, present a somewhat different problem insofar as more tenuous assumptions are required regarding their incidence, their effects on demand, and on spending behaviour in general. A study of these other devices could, and no doubt should, be made in order to arrive at a complete estimate of the impact of automatic

stabilizers. The discussion in Chapter III suggests that indirect taxes and transfers will clearly strengthen the total automatic stabilizing effect.

A further logical refinement of the analysis, which has been ignored on the contention that the results are instructive in the short term only, would be to incorporate a provision for changes in real output during the period under study. To the extent that the national product in real terms increases over the period, for example, the extent of inflationary pressure is overstated and depression understated in terms of the static model employed above. If automatic stabilizers were to be examined for their effects over long periods, then they would clearly have to be studied in the context of a growth model, such as of the Harrod-Domar type, which permits an examination of fluctuations around a changing equilibrium level of income.

Nor does the analysis concern itself with extra-fiscal forces working through monetary changes or changes in liquid holdings resulting from budget imbalances. In fact, as pointed out earlier, some of these pressures are likely to produce a destabilizing influence.

Finally, it is impossible to consider quantitatively the effect of built-in stability on expectations, liquidity, and investment decisions. Insofar as this is favourable, as may be expected, the contribution of automatic stabilizers to counter-cyclical policy is further strengthened.

However, the results obtained accomplish the purpose of the study, which was to discover the pattern in which particular flexible devices tend to react in different circumstances and to provide a

means of finding the approximate magnitude of their impact on economic fluctuations. But regardless of their impact, automatic stabilizers cannot be expected to correct the cause of fluctuations. Since they are in fact activated only by the emergence of a particular trend, automatic reactions can only reduce the size of the multiplier, and even if the multiplier was reduced to unity, the primary cause of the movement would remain.

Insofar as automatic controls can be depended upon, the necessity of relying on forecasting is avoided. If neither forecasting nor automatic controls are adequate it is necessary to devise methods of acting promptly after the fluctuation has occurred. But built-in devices reduce the size of the problem with which other measures must deal, and hence their impact is a relevant, if not essential, consideration in the formulation of stabilization policy.

APPENDICES

APPENDIX I

CALCULATION OF THE MARGINAL AND AVERAGE TAX RATES
ON VARIOUS LEVELS OF PERSONAL INCOME

The procedure adopted in calculating the marginal and average rates of tax for various levels of total personal income, given the 1959 effective rate structure, was as follows. The official figures for the distribution of personal incomes for 1959 provided the data for plotting the cumulative percentage of total personal income against a logarithmic scale of personal income levels (Chart I-A). This shows the cumulative distribution of personal income over the income scale for 1959.

For each of the five alternative levels of personal income, the upper limit of each 1959 income bracket was "adjusted" by multiplying it by the ratio of total personal income in 1959 to that of the alternative in question. This gave values for the upper limit of each income bracket for each alternative in a consistent position relative to total income. Using these "adjusted" upper limits of each income bracket, the cumulative percentage of income by brackets for each alternative were read off the distribution curve for 1959. The decumulated percentage applied to the total personal income of each alternative then gave the distributions of income according to the pattern prevailing in 1959 (i.e. consistent with the 1959 Lorenz curve of income distribution). This process of distribution and the final distribution for each alternative appear in Table I-a.

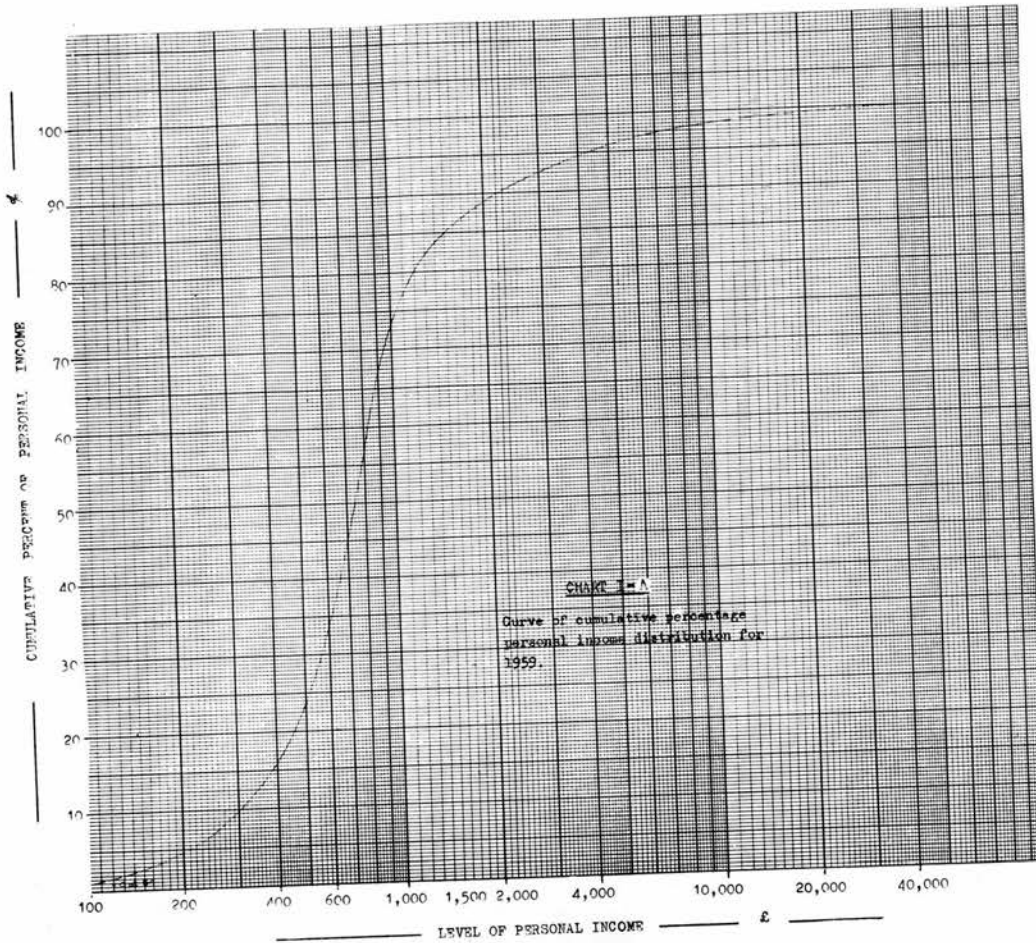


CHART I-A

**CURVE OF CUMULATIVE PERCENTAGE PERSONAL INCOME
DISTRIBUTION FOR 1959***

* Basic data from National Income and Expenditure 1960, Table 22.

TABLE I - a

CALCULATION OF THE DISTRIBUTION OF ALTERNATIVE LEVELS OF PERSONAL INCOME ACCORDING TO THE
PATTERN OF DISTRIBUTION PREVAILING IN 1959

INCOME RANGE	1959 ¹				Alternative I ²				Alternative II ³				Alternative III ⁴				Income figures in £ million Alternative IV ⁵				Alternative V ⁶									
	X7	Cum. % Yp	% Yp	Yp	X7	Cum. % Yp	% Yp	Yp	X7	Cum. % Yp	% Yp	Yp	X7	Cum. % Yp	% Yp	Yp	X7	Cum. % Yp	% Yp	Yp	X7	Cum. % Yp	% Yp	Yp	X7	Cum. % Yp	% Yp	Yp		
50- 250	250	6.94	6.94	1140	260.3	7.50	7.50	1182.3	283.8	8.75	8.75	1265.5	240.5	6.40	6.40	1092.2	223.4	6.00	6.00	1102.0	202.0	4.70	4.70	955.0						
250- 300	300	9.75	2.81	461	312.4	10.45	2.95	465.0	340.5	12.00	3.25	470.5	288.6	9.00	2.60	443.7	268.1	8.00	2.00	367.3	242.3	6.50	1.80	365.8						
300- 400	400	15.93	6.18	1014	416.5	17.25	6.80	1072.0	454.0	19.60	7.60	1099.2	384.7	14.80	5.80	989.8	357.5	13.00	5.00	918.4	323.1	11.20	4.70	955.0						
400- 500	500	23.71	7.78	1277	520.7	25.75	8.50	1339.9	567.5	30.20	10.60	1533.1	480.9	22.00	7.20	1228.8	446.9	19.25	6.25	1147.9	403.9	16.25	5.05	1026.2						
500- 600	600	33.71	10.00	1641	624.8	36.20	10.45	1647.3	681.0	42.75	12.55	1815.1	577.1	30.75	8.75	1493.3	536.2	27.00	7.75	1423.4	484.7	22.25	6.00	1219.2						
600- 700	700	45.12	11.42	1874	728.9	47.75	11.55	1820.7	794.5	55.75	13.00	1880.2	673.3	41.25	10.50	1791.9	625.6	35.80	8.80	1616.3	565.5	30.00	7.75	1574.8						
700- 800	800	56.60	11.48	1884	833.0	60.50	12.75	2009.9	908.0	67.25	11.50	1663.2	769.5	53.00	11.75	2005.3	715.0	46.60	10.80	1983.6	646.3	38.45	8.45	1717.0						
800- 1000	1000	73.27	16.67	2737	1041.3	74.80	14.30	2254.3	1135.0	78.50	11.25	1627.1	961.9	70.80	17.80	3037.7	893.7	66.20	19.60	3599.9	807.8	58.00	19.55	3972.6						
1000- 1500	1500	85.05	11.78	1933	1562.0	85.75	10.95	1726.2	1702.5	86.75	8.25	1193.2	1442.8	84.25	13.45	2295.4	1340.6	82.80	16.60	3048.9	1211.7	80.25	22.25	4521.2						
1500- 2000	2000	88.94	3.89	639	2082.6	89.40	3.65	575.4	2270.0	90.20	3.45	499.0	1923.7	88.40	4.15	708.3	1787.4	87.20	4.40	808.2	1615.6	86.00	5.75	1168.4						
2000- 3000	3000	92.51	3.57	586	3123.9	92.80	3.40	536.0	3405.0	93.50	3.30	477.3	2885.6	92.25	3.85	657.0	2681.2	91.60	4.40	808.2	2423.5	90.80	4.80	975.4						
3000- 5000	5000	95.80	3.28	539	5206.5	96.00	3.20	504.5	5675.0	96.60	3.10	448.4	4809.3	95.60	3.35	571.7	4468.6	95.20	3.60	661.2	4039.1	94.60	3.80	772.1						
5000-10000	10000	98.29	2.49	409	10413.0	98.40	2.40	378.3	11350.0	98.50	1.90	274.8	9618.5	98.25	2.65	452.2	8937.2	98.00	2.80	514.5	8078.2	97.75	3.15	640.1						
10000-20000	20000	99.43	1.14	187	20826.0	99.45	1.05	165.5	22700.0	99.60	1.10	159.1	19237.0	99.40	1.15	196.3	17874.4	99.20	1.20	220.4	16156.4	99.15	1.40	284.5						
20000 +		100.00	.57	94		100.00	.55	86.7		100.00	.40	57.8		100.00	.60	102.4		100.00	.80	147.0		100.00	.85	172.7						
	TOTAL Yp = 16,415				TOTAL Yp = 15,764				TOTAL Yp = 14,463				TOTAL Yp = 17,066				TOTAL Yp = 18,367				TOTAL Yp = 20,320									

- (1) Actual distribution for 1959; from National Income and Expenditure 1960, Table 22.
- (2) I.e. a decrease in personal income of £651 million, or 3.966% of the 1959 level.
- (3) I.e. a decrease in personal income of £1,952 million, or 11.892% of the 1959 level.
- (4) I.e. an increase in personal income of £651 million, or 3.966% of the 1959 level.
- (5) I.e. an increase in personal income of £1,952 million, or 11.892% of the 1959 level.
- (6) I.e. an increase in personal income of £3,905 million, or 23.789% of the 1959 level.
- (7) Where X equals the adjusted position of the upper limit of the income bracket on Chart I-A, obtained by multiplying it by the ratio of total 1959 personal income to that of the alternative in question.

The effective tax rate on each income bracket in 1959 was calculated from the income falling in each income range and the tax payable thereon.* These rates were then applied to the appropriate brackets for each of the five postulated alternatives (Table I-b). The total of the taxes payable by brackets represent the total tax on personal income that would be payable on each alternative if the 1959 tax rates remained constant.

The average rate of tax for each alternative level of income was calculated by dividing the total tax payable by the level of income. The marginal rates were derived as the ratio of the change in tax from the 1959 level to the corresponding change in personal income.

* The first column in Table I-b shows the rates of tax payable on each income range, calculated from the income and tax figures appearing in the second and third columns respectively. These latter figures were taken directly from National Income and Expenditure 1960, Table 22.

TABLE I - b

CALCULATION OF MARGINAL AND AVERAGE RATES OF TAX ON THE ALTERNATIVE CHANGES IN PERSONAL INCOME AROUND THE 1959

LEVEL AT 1959 EFFECTIVE RATES BY INCOME BRACKETS

Income and tax figures in \$ million

INCOME RANGE	1959 Effective Tax Rate*	Income Distributions and 1959 Effective Tax Rate for Each Income Bracket Applied Throughout											
		1959		Alternative I		Alternative II		Alternative III		Alternative IV		Alternative V	
		Yp	Tp	Yp	Tp	Yp	Tp	Yp	Tp	Yp	Tp	Yp	Tp
50- 250	.175	1140	2	1182.3	2.1	1265.5	2.2	1092.2	1.9	1102.0	1.9	955.0	1.7
250- 300	1.302	461	6	465.0	6.1	470.0	6.1	443.7	5.8	367.3	4.8	365.8	4.8
300- 400	3.452	1014	35	1072.0	37.0	1099.2	37.9	989.8	34.2	918.4	31.7	955.0	33.0
400- 500	4.933	1277	63	1339.9	66.1	1533.1	75.6	1228.8	60.6	1147.9	56.6	1026.2	50.6
500- 600	5.667	1641	93	1647.3	93.4	1815.1	102.9	1493.3	84.6	1423.4	80.7	1219.2	69.1
600- 700	6.137	1874	115	1820.7	111.7	1880.2	115.4	1791.9	110.0	1616.3	99.2	1574.8	96.6
700- 800	6.900	1884	130	2009.9	138.7	1663.2	114.8	2005.3	138.4	1983.6	136.9	1717.0	118.5
800- 1000	7.600	2737	208	2254.3	171.3	1627.1	123.6	3037.7	230.9	3599.9	273.6	3972.6	301.9
1000- 1500	10.709	1933	207	1726.2	184.9	1193.2	127.8	2295.4	245.8	3048.9	326.5	4521.2	484.2
1500- 2000	18.466	639	118	575.4	106.3	499.0	92.1	708.3	130.8	808.2	149.2	1168.4	215.8
2000- 3000	25.768	586	151	536.0	138.1	477.3	123.0	657.0	169.3	808.2	208.3	975.4	251.3
3000- 5000	33.581	539	181	504.5	169.4	448.4	150.6	571.7	192.0	661.2	222.0	772.1	259.3
5000-10000	45.477	409	186	378.3	172.0	274.8	125.0	452.2	205.6	514.3	233.9	640.1	291.1
10000-20000	60.963	187	114	165.5	100.2	159.1	97.0	196.3	119.7	220.4	134.4	184.5	173.4
20000+	75.532	94	71	86.7	65.5	57.8	43.7	102.4	77.3	147.0	111.0	172.7	130.4
Total personal Income (Yp)		16,415		15,764		14,463		17,066		18,367		20,320	
Total Tax Payable (Tp)			1,680		1564.2		1337.2		1806.9		2070.7		2481.7
Average Tax Rate $\left(\frac{T_p}{Y_p}\right)$.102		.099		.093		.106		.113		.122
Postulated Change in Personal Income (ΔY_p)					-651		-1952		651		1952		3905
Postulated Change in Tax Payable (ΔT_p)					-115.8		-342.3		126.9		390.7		801.7
Marginal Rate of Tax $\frac{\Delta T_p}{\Delta Y_p} (= m')$.1779		.1754		.1949		.2002		.2053

*Derived from income and tax figures by ranges for 1959; National Income and Expenditure 1960, Table 22.

APPENDIX II

CALCULATION OF AGGREGATE INCOME AND UNDISTRIBUTED CORPORATE PROFITS
AND THEIR INCREMENTS OF CHANGE OVER THE YEARS 1950 to 1959

	£ million									
	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959
Gross Corp. Savings ¹	2241	2553	2076	2340	2646	2806	2889	2999	2928	3202
Capital Consumption ²	-523	-601	-699	-751	-788	-862	-956	-1037	-1144	-1193
Stock Appreciation ³	430	975	-39	-9	186	512	399	375	65	169
Corp. Savings ⁴ Sb	2,148	2,927	1,338	1,580	2,044	2,456	2,331	2,337	1,849	2,178
Personal Income ⁵ Yp	(9,337)	(10,162)	(10,952)	11,483	12,310	13,365	14,473	15,189	15,792	16,415
Aggregate Income Y	11,485	13,089	12,290	13,063	14,354	15,821	16,805	17,526	17,641	18,593
Percent Sb in Y	18.70	22.36	10.89	12.10	14.24	15.52	13.88	13.33	10.48	11.71
Δ Sb	779	-1589	242	464	412	-124	5	-488	329	
Δ Y	1,604	-799	773	1,291	1,467	984	721	115	952	

¹ Undistributed corporate income including taxes on income but before providing for depreciation and stock appreciation; calculated from National Income and Expenditure, 1960, Table 3.

² Capital consumption of companies and public corporations; calculated from Ibid., Table 58.

³ Increase in value of stocks and work in progress of companies and public corporations; calculated from Ibid., Table 60.

⁴ Net corporate savings before tax, calculated from the above three items.

⁵ As defined in the text. For the years 1950, 1951 and 1952, consistent figures of allocable personal income were not available. They were, therefore, calculated by dividing the national income figures of total personal income for those years by the average ratio of allocable personal income to total personal income for the following seven years.

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