

CYCLICAL BEHAVIOR OF GOVERNMENT RECEIPTS AND EXPENDITURES —A CASE STUDY OF POSTWAR JAPAN—

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I. Introduction

It is widely accepted that government expenditure and taxation can play an important role in the control of aggregate demand as a device for promoting economic stability. The purpose of this study is to evaluate the stabilizing effect of government fiscal activity in postwar Japan, and its scope is limited to two relatively simple considerations: (1) Identifying empirically the cyclical behavior of government surplus and deficit, and thereby (2) Evaluating the planned and unplanned fiscal actions employed by the Japanese government during the postwar period.

Though extensive theoretical work has satisfactorily demonstrated the benefits of the countercyclical use of government fiscal instruments in the pursuit of economic stability, in practice, however, it seems that the empirical aspects of the problem have not always been sufficiently investigated and thus significant conclusions concerning the actual working of fiscal policy have been difficult to reach. In the case of Japan, this description is particularly apt.

The present analysis primarily aims to provide a quantitative description of cyclical patterns of time series data related to government fiscal activity in the course of business cycles. Presumably, most changes in government receipts and expenditures are influenced by business cycles, and in turn have some feed-back effects on the state of business conditions. In other words, there must be some reciprocal causative relations between those two elements. It would be desirable to estimate separately the influence of each of the causative factors, but our aim here is less ambitious. Indeed, an attempt is only made to ascertain the facts about the movements of fiscal data in the context of the swings of business conditions as actually experienced by the economy.¹ Thus, this is a straight-forward factual account of how government receipts and expenditures have fluctuated.² It will

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¹ Furthermore, no effort has been made here to study the aspects of monetary, credit and public debt actions that were closely related to the development of fiscal policy, though I must admit that it is impossible to ignore them completely. Therefore, it must be acknowledged that this will give only an incomplete picture of the total government activity affecting the economy.

² No attempt has been made to appraise the effectiveness of fiscal policy from a standpoint of policy target, such as "full employment surplus" used in E.C. Brown's study or "implicit federal surplus" used in W. Lewis' study. In Japan, it is almost impossible to set forth such a policy target as has been developed in the U.S. since no emphasis has been placed on the target of full employment. See, E.C. Brown, "Fiscal Policies in the 'Thirties': A Reappraisal", *American Economic Review*, December 1956, and W. Lewis, Jr., *Federal Fiscal Policy in the Postwar Recessions* (Washington, D.C.: The Brookings Institution, 1962), chaps. I-III.

provide, however, some new revelations and more exact knowledge to ascertain past sources of weakness and strength of the fiscal policy.

The approach employed here follows the one developed by the National Bureau of Economic Research (NBER) which has for half a century studied a wide variety of economic progress in order to better understand the workings of business cycles. The main reason for selecting the NBER approach from among the other methods is that like its proponents, we consider the examination of empirical evidence as the most important step to be taken prior to more advanced analysis.³ As pointed out by the NBER economists,⁴ the source of disagreement and confusion in discussion often seems to be an unwillingness to examine the economic data in full detail.

As a first step towards clarifying the purpose of the analysis, let us specify the period covered by this study. For the following two reasons, the period from 1953 to 1965 is focussed in this analysis. First of all, the year 1953 was chosen as the starting point because it is generally agreed upon as the completion date of the postwar recovery process, and the beginning of normal business conditions and cycles. On the other hand, since the years during which the so-called balanced budget policy was strictly adhered to is of central interest in this study, the year 1965 which marks the termination of this policy with the issuing of the first long-term national bonds in the postwar period is an appropriate closing date for the period to be studied. The peculiar characteristic of the government fiscal activity during the time period under consideration was that, unlike other nations, in Japan no public debt of any significant size was incurred. Therefore, the postwar Japanese experience seems to provide an interesting topic worth noting in the analysis of the operation and effectiveness of fiscal policy.

This study consists of three sections, the first of which includes a preliminary discussion of postwar Japan with special reference to the state of business cycles and the government fiscal activity. This is followed by a statistical inquiry into the surpluses and deficits in the government accounts in section III. The final section is devoted to the examination of factors in the fiscal system to which may be attributed the countercyclical effects of the government fiscal activity.

II. *The Postwar Experience in Japan*

—*Business Cycles and Government Fiscal Activity*—

Before embarking upon any detailed discussion of the problem, it is necessary to briefly

³ To date, there has been much discussion about analytical methods of empirical study, especially in connection with the analysis of business cycles. Briefly, in addition to NBER, there are the two other approaches of econometrics and quantitative historical study. As each of the three approaches has its own advantages and disadvantages, they should not be seen as mutually exclusive, but rather should be used to supplement each other. Accordingly, we have not rejected the two other approaches in selecting the NBER method for use in this study. For a more extensive discussion of these topics, see, T.C. Koopmans, "Measurement without Theory," *Review of Economic Statistics*, August 1947; K.D. Roose, "The Empirical Status of Business Cycles Theory," *Journal of Political Economy*, October 1952; R.A. Gordon, "Current Research in Business Cycles: Business Cycles in the Inter-war Period; The Quantitative Historical Approach," *American Economic Review, Papers and Proceedings*, May 1939.

⁴ For example, see, W.C. Mitchell and A.F. Burns, *The National Bureau's Measurement of Cyclical Behavior*, NBER, Bulletin 57, July 1, 1953, pp. 2-3.

note the salient features of Japan's postwar experience. Two major topics must be considered; the actual state of business cycles and the operations of the government fiscal actions.

Let us first summarize the general properties of business cycles in postwar Japan. What caused the postwar business cycles and how likely they came to be are beyond the field of inquiry. What is needed here is some business indicator of aggregate economic activity to be contrasted with the cyclical behavior of the government surplus and deficit. For this purpose, it seems very appropriate to use the reference cycle dates in the NBER terminology as an important indicator, without going further into the theory of business cycles. Although the reference dates do not pretend to do more than to sketch the turning points of business conditions (i.e., peaks and troughs), they seem to be very helpful for our analysis. The reference dates are given as indicators of the months during which clusters of peaks or troughs of individual series have occurred. That is to say, the single month within the clustering zone when economic activity reached its largest (or smallest) volume is designated as a reference peak (or trough).

Much laborious and time consuming work is required before the reference dates may actually be determined and a chronology of business cycles established. Fortunately, two sets of such data are available for the postwar period in Japan: one is estimated by the Economic Planning Agency (EPA) and the other by the Bank of Japan. Both chronologies are presented in Table 1. The estimates of the length of the periods of the reference dates as

TABLE 1. REFERENCE DATES OF BUSINESS CYCLES IN POSTWAR JAPAN

reference cycles	Reference Dates			Number of Months		
	initial trough	peak	terminal trough	expansion	contraction	total
1		June 1951 (May 1951)	Oct. 1951 (Sep. 1952)		4 (16)	
2	Oct. 1951 (Sep. 1952)	Jan. 1954 (Feb. 1954)	Nov. 1954 (June 1955)	27 (17)	10 (16)	37 (33)
3	Nov. 1954 (June 1955)	June 1957 (May 1957)	June 1958 (Sep. 1958)	31 (23)	12 (16)	43 (39)
4	June 1958 (June 1958)	Dec. 1961	Oct. 1962	42	10	52
5	Oct. 1962	Oct. 1964	Oct. 1965	24	12	36
6	Oct. 1965	Aug. 1970		58		

Source: Economic Planning Agency, *Monthly Report on Basic Data for Economic Analysis*; The Bank of Japan, *Business Cycle Indicators in Japan from 1951 through June 1959* (both in Japanese).

Note: The dates and numbers in parenthesis are estimated by the Bank of Japan while all the remainders are those of the EPA.

given by the Bank of Japan are much shorter than those given by the EPA. There are also some substantial differences between the two estimates for the overlapping period of 1951-58, reflecting some basic dissimilarities in the statistical methods employed. No attempt here is made to seek out the sources of such differences, and the EPA chronology was

chosen for use in this study merely because it covers a longer span of time.

Insomuch as the EPA reference dates are accurate, there are a few marked features about the postwar business cycles in Japan. First of all, when the pre-1951 period is excluded for reasons of ambiguity of the date of the trough, it is observed that the economy has experienced four cycles (that is, from the second to the fifth reference cycles) composed of perfect expansions and contractions for the fifteen years since 1953. Secondly the duration of each of these cycles has been from three to four years. It may be suggested that these constitute minor cycles, not major ones, and should be designated as "inventory cycles". Furthermore, the historical records of business cycles clearly appear as a series of expansions followed by briefer periods of contraction. In fact, contractions have been short, normally less than a year each in length, while the periods of expansion have been longer, averaging two years and a half in length. Finally, these results would indicate that Japan has experienced only mild recessions, not serious depressions, every three years. Accordingly, it was optimistically felt up to 1965 that three years of upswing could be anticipated to be punctuated by a year of modest downswing.

This pattern of business cycle raises a question as to the use of the NBER method. As a result of a very strong upward trend advanced by the longer periods of expansion the absolute amount of any time series adjusted for seasonal variations shows no cyclical movement.⁵ It suggests that the NBER method cannot immediately be applied to the postwar Japanese experience. Thus, to recreate a cyclical pattern for the government time series, we should revert to the practice of measuring the rate of increase relative to the previous period or some deviations from a secular trend.

Next, we shall turn to the problem of government fiscal activity under such repetitive periods of business cycles. Throughout the postwar period, it should be noted that there have been some forms of fiscal "principles" or "rules", which have gradually been created in correspondence with the actual performance of the economy. We may be able to call them "empirical rules". Although some differences in interpretation may exist, it seems safe to summarize the operation of the government fiscal activity until 1965 under the following three empirical rules:

- (1) a balanced budget
- (2) a tax policy with a constant ratio of tax burden relative to the national income
- (3) an intended underestimation of the "natural increase in tax yields" caused by a growing economy.

The first rule of a balanced budget has been the dominant characteristic of fiscal policy in postwar Japan. The basis for this lies in the traditional view of "sound" finance; i.e., all the government expenditures must be financed by current revenues in the government sector. Following this axiom, the issuing of public debt during the postwar period was restricted rigidly to a statutory limit of "constructive bonds" by the Finance Law to prevent the easy use of deficit-covering debt. This concern for a balanced budget had been the result of a reaction to extravagant government spending and the inflationary pressures which had

⁵ Time series other than fiscal data, such labor force or production index, can better demonstrate the lack of cyclical movement when drawn in terms of the absolute volume.

been experienced in prewar Japan. At the outset of the Dodge Plan,⁶ the balanced budget was actually implemented at all levels of government; that is, not only in the general account of the central government but also in its special accounts, in other accounts of government-related agencies, and in local government. However, the balanced budget policy has had to be altered with the passage of time. Indeed, government guaranteed securities and local bonds were issued. But it was not until 1965 that national bonds were issued and a deficit appeared in the general account. Not even any "constructive bonds" were issued prior to this date. Thus, we should note that the meaning of the term "balanced budget" has been slightly altered as the postwar period has progressed. Nevertheless, it cannot be denied that the balanced budget should be emphasized as the most fundamental rule of the government fiscal policy.

The second empirical rule has been to keep the ratio of tax yields to the national income constant (e.g., 20 per cent). This rule for the tax policy has been adopted, especially in the period 1955-1965. In a growing economy like that of postwar Japan, this leads to large amounts of tax reductions. In particular, the personal and corporate income taxes must significantly be reduced every year. If tax reductions had not been implemented, the income taxes would have considerably overburdened the taxpayers. Therefore, to avoid overburdening the taxpayers the income taxes had to be reduced successively almost every year.

In addition to these two rules, the intended underestimation of the natural increase in tax yields must be referred to as the third empirical rule. It bears close relation to the two rules discussed above. Some tax yields such as that from the personal income taxes naturally register increases as the tax base expands with the growth of the economy even if there are no changes in the tax rate and exemptions. The higher the rate of economic growth is, the larger the amount of natural increase in tax yields that can be expected. In actuality, a large volume of natural tax increases was realized each fiscal year up to 1965 which provided a substantial amount of new financial resources in the preparation of the annual budget. That is to say, one portion of the natural tax increases was appropriated to the financing of tax reductions, and the other was devoted to the financing of new expenditure programs. Thus a big, expansion-minded budget was annually created by means of such large amounts of natural increase in tax yields. A question is raised about the estimation of the natural tax increase. It is largely based on the anticipated rate of economic growth which is usually computed five or six months earlier than the beginning of fiscal year.⁷ For an illustration, let us suppose that the GNP will expand 12 per cent in the next year. Based upon this anticipated rate, the Ministry of Finance usually estimates what the natural tax increases will be; for instance, more than 500 billion yen. In doing so, some non-economic factors of bias may be easily introduced into the calculation of the anticipated rate of economic growth. In most cases, it was proposed to underestimate the GNP growth rate intentionally in order to decrease the expected amount of natural tax increase used as a new financial resource at the stage of budgetary preparations. Thus, since at the end of each fiscal year the realized rate of growth is always much higher than the anticipated rate, an enormous

⁶ The Dodge Plan was a program for economic policy drawn up by Joseph M. Dodge, then adviser to the Allied Forces in Japan. Its conservative and stringent recommendations which emphasized a balanced budget as an important measure to counter inflation were implemented for a few years after 1949.

⁷ In Japan, the fiscal year starts from April and ends in March.

amount of natural increase in tax yields materializes during the intermediate term after the implementation of the new budget.

In what respect are these three empirical rules connected with the stabilizing effect of fiscal actions? First of all, judging from the fact that sentiments for balanced budget and fiscal responsibility have remained strong, it may be suggested that the pursuit of countercyclical policy through the manipulation of government surplus and deficit has never been employed at all, or at least it has not been done intentionally. Next, it should be noted that the main target of the tax policy has been the enforcement of tax cuts. Hence, this tax-cut policy has been carried on continuously with no respect to the state of business cycles. Similarly, the underestimation of the natural increases in tax yields has not worked in favor of countercyclical policy. The government has always constructed a few supplementary budgets during the intermediate term of the fiscal year which are financed by the natural tax increases currently accrued. This indicates that the government surpluses from the natural tax increases have been spent in an expanding economy which had attained a high rate of growth, although it should have been retained in the treasury for the sake of stabilization. Thus, it seems permissible to suggest that all the empirical rules have acted as an active constraint for countercyclical fiscal actions.

So far as such past experiences of fiscal operations are concerned, one might feel pessimistic somehow about this study, the purpose of which is to seek some empirical evidence in favor of the countercyclical effect of fiscal policy in Japan. The reason for this is that the effectiveness of fiscal policy is restricted to a considerable extent by many constraints as we have already seen. The above discussion, however, is only part of the story. Despite the numerous constraints, there is good evidence—as presented below—to support the hypothesis that the fiscal policy has been countercyclical and has encouraged government surplus during prosperity and deficit in times of recession. Such evidence may be important in the clarification of the debate over the question of the effectiveness of fiscal policy in postwar Japan.

Before proceeding further with the problem of finding statistical facts, it would be useful to clarify here another assumption. In shaping the government fiscal activity, the state of business fluctuations is never the only factor and seldom the most important factor. Indeed, its operation is under many constraints and is shaped by many considerations other than those of economic stability; e.g., resource allocation or income distribution. Stated differently, the government's action affecting receipts and expenditures is not confined to counteracting trends in aggregate demands. Therefore, the actual time series of government receipts and expenditures reflect the mixed results of the fiscal actions pursued in the past. Ideally, it would be desirable to disentangle those actions from each other and to extract only the stabilizing effects of government behavior from them. With the exception of a theoretical treatment,⁸ it is in practice impossible to decide definitely whether or not the motive for a particular action was primarily to counter recession or inflation. To deal with the problem, it must be assumed that the actual variations of government receipts and expenditures associated with actions other than economic stabilization are unchanged over time and ignored for simplicity of the analysis. That is to say, the treatment of all the variations found in the statistical data as changes resulting solely from the stabilizing

⁸ For example, see R.A. Musgrave, *The Theory of Public Finance* (New York: McGraw-Hill, 1959), Ch. 3.

action of the government must be justified.

III. *Cyclical Patterns of Government Surplus and Deficit*

The principles of fiscal action in the interest of economic stability are simple according to the textbooks of modern fiscal policy. The government is supposed to use budgetary changes as a stabilizing device to moderate business fluctuations; i.e., in theory, a cyclical pattern of government surplus in expansion and deficit in contraction is to be anticipated over a business cycle. Therefore, the first thing to be done as a simple but basic approach is to observe the movements of time series relating to government receipts and expenditures from a stabilization standpoint.

In proceeding with the statistical operations, it should be noted that annual data are very crude and inadequate for testing the cyclical behavior of the government fiscal activity. However, many of the statistics which have so far been developed to investigate the counter-cyclical effects of fiscal actions are based on the annual data. Such empirical estimates on the annual basis have generally left something to be desired, because they have obscured timing relations between the fiscal time series and the state of business conditions, making it impossible to trace cyclical patterns with confidence since business cycles cannot satisfactorily appear by annual unit. For this reason, in this study monthly data will be used, even though their compilation and analysis are more difficult than for annual data.

A definition of government receipts and expenditures is not as precise as it sounds, because they are measured in various different ways. Thus, it is necessary to clarify at this point the exact concept of government surplus and deficit. This question has a close bearing on the problem of the definition of the scope of government to be used. Of the alternative scopes of government for which there exists adequate statistical information, three are of central interest for our purpose. First, the general account for the central government can be referred to as representing the narrowest scope. Second, a broader concept can be obtained from the addition of special accounts and government-related agencies to the general account in the sphere of the central government. Third, by adding the local government to the central government, the broadest scope of government can be followed by the concept of national income accounts. To recapitulate, three concepts are presented as follows:

- (1) general account
- (2) central government; concept (1) plus special accounts and government-related agencies
- (3) total government; concept (2) plus local government.

Each of them has its own advantages in the analysis. Let us first suppose the government is limited to concept (1). There are two advantages to concept (1) which need to be considered in reference to this study. For one thing, it provides a good framework for studying the government's behaviors while operating under a balanced budget because much has been discussed concerning this within the scope of the general account. The other advantage is that the stabilizing effect of tax yields can be described better using concept (1). If the government were defined as a broader concept, the relative importance of tax yields would be reduced because a number of revenues items other than taxes are in-

roduced into the picture. Also, the scope of the central government—i.e., concept (2)—may be regarded as an optimal concept in representing the policy performance of fiscal operation for economic stabilization, since it contains the program of government investment and loans which is considered to have worked rather effectively as a counter-cyclical device. However, it cannot be utilized in practice because of the lack of detailed data. Finally, the scope of total government is conceptually correspondent to the national income analysis. Therefore, the magnitude of government fiscal actions in the overall level of economic activity can be acquired clearly by using concept (3).

Which concept is the proper one to employ primarily depends upon the availability of monthly data, so far as our analysis is concerned. In this respect the narrowest scope of government is preferred, reflecting the fact that detailed monthly data can be compiled for concept (1) alone. In addition to this, however, concepts (2) and (3) will also be introduced below to check the possible bias which may be caused by choosing the narrowest concept.

The time series of government surplus and deficit are computed on a monthly basis by taking the algebraic difference between receipts and expenditures, after the necessary statistical calculations are done. Since government receipts and expenditures data are published currently under a couple of accounting systems, it is necessary to consider briefly the characteristics of the series analyzed here. The basic data of government receipts and expenditures concerning the general account are compiled from a Finance Ministry source, entitled, "Receipts and Payments from or to the Public in the Treasury," which is the single series on a monthly basis going as far back as 1949.⁹ It represents the receipts and expenditures on a current cash basis for providing an accurate idea of the government's day-to-day business.

Throughout these monthly compilations from the basic source, only those which are entered as current are included. This implicitly eliminates national debt from among the government's receipt items, although national debt had never been listed prior to 1965 in the sphere of general account. Hence, the items of current receipt consist of (1) taxes, (2) the profits of the Japan Monopoly Corporation, and (3) others.¹⁰ They are to be contrasted with government expenditures including defense expenses, public work expenses, grants-in-aid to local governments, general shares in compulsory education expenses and others.¹¹ Let us now denote government current receipts and expenditures as Y_g and G , respectively. Government surplus and deficit is defined, depending upon $Y_g - G \geq 0$.

⁹ More specifically, the Treasury's series are divided into two kinds of receipts and disbursements, depending upon the accounting method; (1) "formal series" and (2) "real series". The "real" series differs from the "formal" one in that intra-governmental transactions have been eliminated from the "real" one. Since overlapping items should be omitted to get a true transaction from or to the public, the "real" series are preferable. However, the "real" series are not available before 1953. Therefore, for the years prior to 1953 a substantial amount of estimation was necessary to obtain the "real" series from the "formal" one which goes as far back as 1949.

¹⁰ This "others" item is composed of (1) the government's business profits and receipts; (2) receipts from liquidation of government property; (3) surplus receipts during the preceding fiscal year; and (4) miscellaneous.

¹¹ Comparing it with the terminology of national income analysis, this term "government expenditure" used here includes not only government purchases of goods and services but also transfer payments and current subsidies. Thus, this makes definition of government surplus and deficit consistent with that used in the national income framework discussed later.

The next issue to be dealt with is the statistical manipulation of the monthly data to be used in the formulas above. It is generally accepted that any monthly data consists of the following four components;

- (1) secular trend T
- (2) seasonal variation S
- (3) cyclical fluctuation C
- (4) random movement I

where all components can be composed in terms of TSCI or $T+S+C+I$. Therefore, it is impossible to derive government surplus and deficit series by computing directly the difference between receipts and expenditures in the original data. Some statistical adjustment will be required before subtracting one series from another. Indeed, all non-cyclical variations must somehow be eliminated in order to analyze cyclical behavior of government surplus and deficit. Hence, we shall begin the statistical operation by attempting to isolate any cyclical fluctuation from the original monthly data.

The most important among the statistical procedures is to adjust for seasonal variations. The seasonal variation of some series is estimated by their compilers, but in most instances we have to carry out this operation ourselves. The individual series of government receipts or expenditures show an unmistakable seasonal swing—i.e., repetitive intra-annual variations are seen when the data are graphed. For example, the government receipts series have a few marked months every year which are distinguished as a period of intensive tax collection because of the laws and practices of corporate and self-assessed personal income taxes. Likewise, a clear-cut seasonal variation is found in the government expenditure series by the same reasoning. Although techniques of seasonal adjustment have been greatly improved in recent years with the development of electronic computers, the problem of eliminating seasonal variation still remains troublesome in practice. In the present analysis, three techniques are utilized alternatively;

- (1) the "centered" twelve-month-moving-average method¹²
- (2) the U.S. Bureau of the Census method (X-10)
- (3) the EPA method¹³

At the same time as the seasonal variation is eliminated, the random movement is also removed.

After the laborious process of eliminating both the seasonal variation and random movement from time series has been carried out, another problem remains to be solved. The data should be adjusted for the secular trend, in addition to this, if we are to attempt a full analysis of cyclical behavior. However, it is very difficult to separate cycle from trend. In fact, the isolation of cyclical fluctuation is a highly uncertain operation. In the NBER method, no attempt is made to adjust for the secular trend for two reasons.¹⁴ In the first place, there are no reliable devices of statistical procedure for the segregation of cycle and

¹² This method first entails taking a twelve-month-moving-average of the original figures, then placing each average in the sixth month and half. Thereafter, these results are again moving-averaged. Systematic smoothing of a time series tends to eliminate short-run oscillations produced by random factors. In this respect the random movement of a series can be cancelled out by this operation.

¹³ This method is the one developed by Economic Planning Agency in Japan. For a detailed information, see EPA, *Annual Report on National Income Statistics*, appendix, each year.

¹⁴ For instance, see Wisley C. Mitchell, *What Happens during Business Cycles* (New York: NBER, 1951), pp. 13-14.

trend. Secondly, the turning points are likely to be lost or blurred when the secular trend is completely removed from the data. Accordingly, it is suggested that the statistical operations performed on the isolation of cyclical components may lead an investigation to bury real problems and worry about false ones.

Thus, the ideal procedure would undoubtedly be to make two sets of measurements for each series of government receipts and expenditures; i.e., one set based on the data unadjusted for trend but adjusted for seasonal and random factors, and the other based on the best attainable isolation of the cyclical component of the original data. There is still another troublesome factor concerning second set, because it leaves room for choice of the method of computing the trend line. In order to obtain the trend line, as is often done, the two methods have been employed; i.e., (1) 40-month-moving-average method, and (2) a fit of least square trend line (both straight line and quadratic equation) method. Even if the trend were to be removed by some method, it must be acknowledged that the analytic significance of the trend line is obscure. Since the most plausible results are obtained by using method (1), it is chosen for use in the succeeding analysis. By contrast, even if the receipt-expenditure data unadjusted for the secular trend are used in computing the government surplus and deficit, it may be suggested that the problem of eliminating the trend line can be settled itself by the nature of the method used here. That is to say, the trend line which would possibly be included in each of the receipts and expenditures might be cancelled out as a result of subtracting one series from another, provided that both series have the same trend.

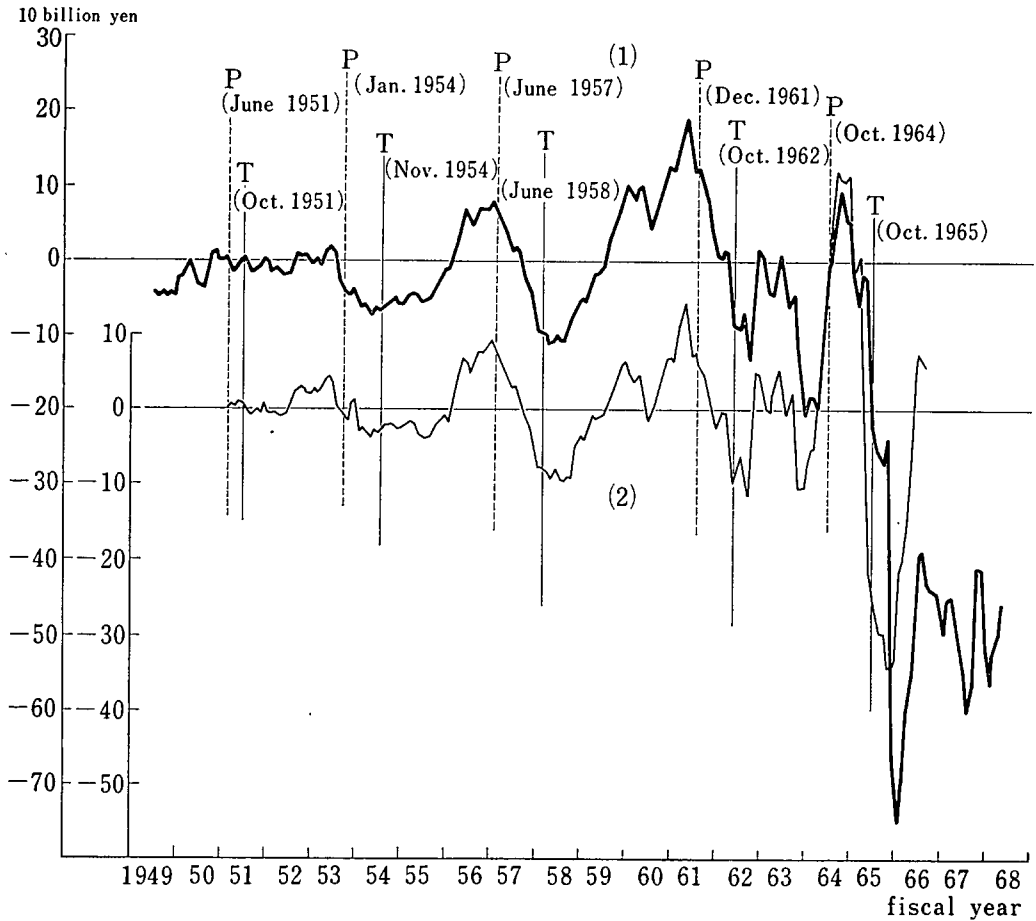
In the following three charts, multiple series of government surplus and deficit are presented, reflecting the diverse statistical operations. Throughout all the series, the statistical evidence seems to yield a fairly realistic picture of the 'cyclical components' and to provide clues to the actual behavior of government surplus and deficit. Let us, first of all, take note of the basic series as defined by the narrowest scope of government in Chart 1. It consists of the movements of two series (1) and (2), which could be considered to be the most reasonable of all the possible combinations of statistical adjustments.¹⁵ These two series, which show almost the same patterns over the period in question, promise to be more useful in explaining cyclical behavior of government surplus and deficit than results gained from highly fabricated series by the EPA or the Census (X-10) methods.¹⁶ The monthly values of government budgetary balances are depicted in Chart 1 for the years 1949-68 in series (1) and for the years 1951-1966 in series (2), respectively, covering the four complete business cycles based on the reference dates as seen in Table 1.

There are two points that are especially worth noting. To begin with, only during transitions as the budget was passing from deficit to surplus (or in the opposite direction) could the budget be momentarily in balance. It should be noted that the balanced budget has practically been only a part of Japanese fiscal history, although the actual fiscal operation in postwar Japan was broadly admitted as a balanced budget principle. Conversely, a pretty clear-cut picture of cyclical patterns can be indicated. Next, it might be emphasized that

¹⁵ For a more detailed explanation of series (1) and (2), see footnote of Chart 1.

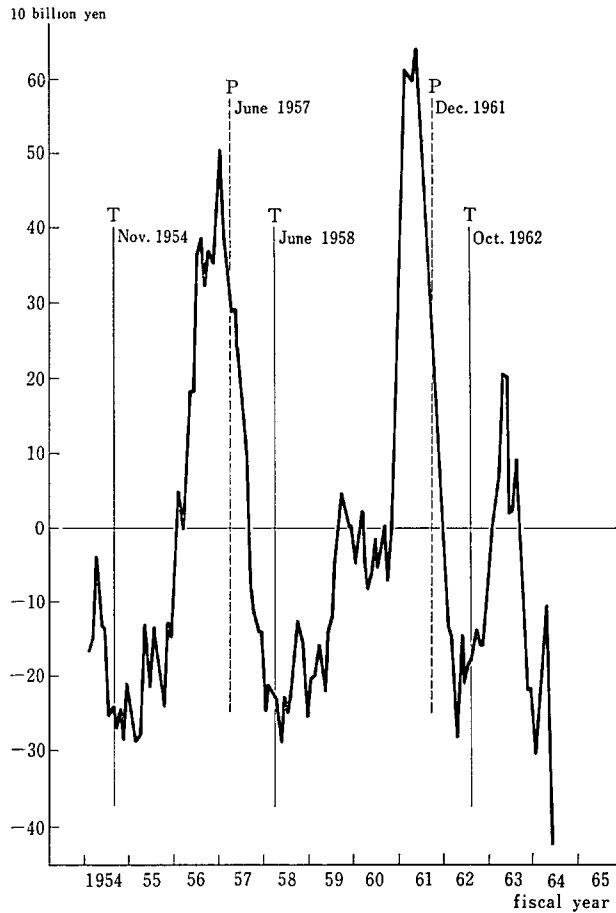
¹⁶ Of course, other series can also be employed in the present analysis, alternatively. However, the series drawn in Chart 1 are preferable because of the more plausible and realistic result. In the results obtained from the application of the EPA or the Census (X-10) methods, there are more erratic, and small oscillations which obscure the cyclical patterns which may be observed in Chart 1.

CHART 1. CYCLICAL PATTERNS OF GOVERNMENT SURPLUS AND DEFICIT IN THE GENERAL ACCOUNT OF CENTRAL GOVERNMENT



Source: Ministry of Finance, *Monthly Report of Fiscal and Monetary Statistics (in Japanese)*
 Note: 1) Series (1) is the monthly budgetary balances calculated by using the data of trend-cycle components while series (2) is obtained by using the data of cycle component alone. See text for a more detailed explanation.
 2) P with broken vertical lines and T with solid vertical lines here and in subsequent Charts, represent the EPA reference dates, peaks and troughs, respectively.

CHART 2. CYCLICAL PATTERNS OF GOVERNMENT SURPLUS AND DEFICIT
IN THE CENTRAL GOVERNMENT

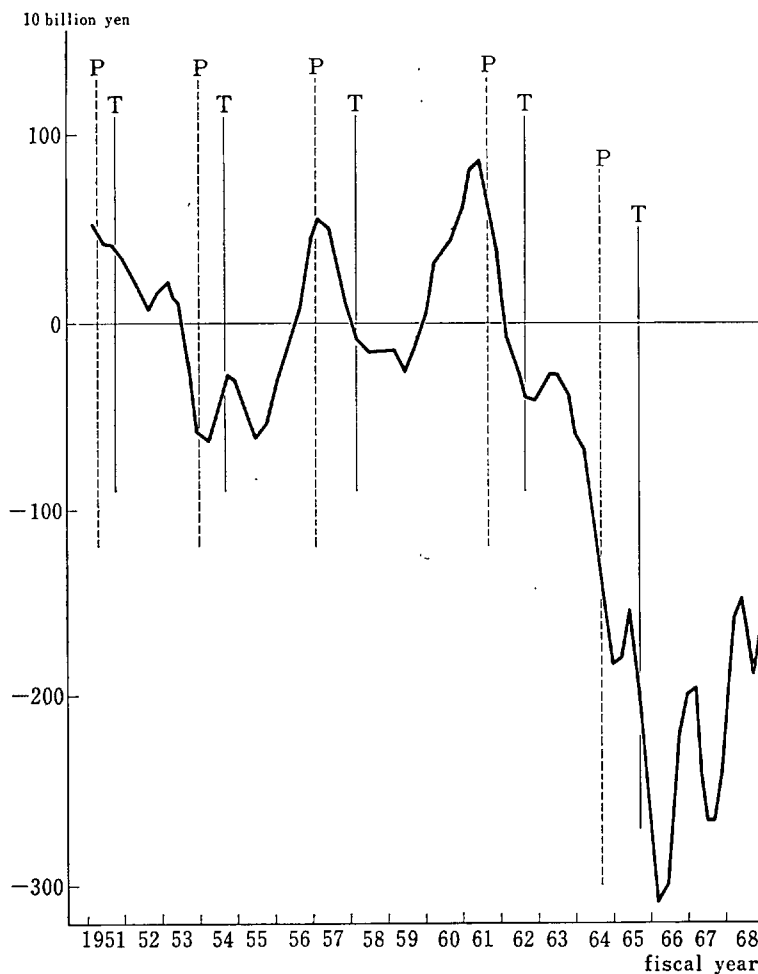


Source: The Bank of Japan, *Basic Data for Economic Analysis* (Seasonal Adjustments by the Census Method) (in Japanese), 1965, pp. 90-95.

Note: 1) The scope of government is enlarged to the whole central government including the special accounts and government-related agencies in addition to the general account.

2) The budgetary balances are computed on a monthly basis in the form of "Treasury's Receipts from the Public" minus "Payments to the Public", using the data adjusted for seasonal variation and random movement by the compiler.

CHART 3. CYCLICAL PATTERNS OF GOVERNMENT SURPLUS
AND DEFICIT IN TOTAL GOVERNMENT



Source: EPA, *Annual Report on National Income Statistics*, 1971.

Note: The budgetary balances are computed on a quarterly basis by using the data of trend-cycle components. See footnote 17 in section III for explanation of the definition.

their cyclical patterns have been countercyclical over fairly long stretches. Let us now insert the troughs or peaks of reference dates into Chart 1. The business cycles of 1954-58 and 1958-62 provide good tests of countercyclical movements. Indeed, in both cases the deficit with which the cycle began gradually became a net surplus as the business expansion developed, while it dwindled again to a deficit during the business contractions. In contrast to this, the experience of both the 1951-54 and 1962-65 cycles have not produced similar patterns. The 1951-54 period can be justifiably omitted from consideration since there is some obscurity concerning both the occurrence of the business cycle and the estimation of our basic data. But some reason regarding the 1962-65 period must be presented. In the post-1962 cycle, the countercyclical movements of the preceding two cycles are absent as evidenced by the graph. This implies that some changes had already occurred in the fiscal system by 1962, although it was not until 1965 that national bonds were issued.

In order to verify these results obtained from using the narrowest scope of government, we shall alternatively introduce two other concepts of government surplus and deficit into the analysis. Chart 2 illustrates the cyclical patterns of the central government's budgetary balances, using monthly data as reported by the Bank of Japan. It is clear that the patterns bear a close resemblance to those obtained from using the general account discussed above. That is, the surplus-deficit series reveal an obvious countercyclical pattern in the periods 1954-58 and 1958-62 while the pattern is disturbed in the 1962-65 cycle. Similarly, Chart 3 is drawn for the total government,¹⁷ although the data here is available only on a quarterly basis. The government surplus and deficit displayed a countercyclical effect in both the 1954-58 and 1958-62 cycles, corresponding to the evidence from the previous scope of government. Thus, the original observations as obtained from the narrowest scope of government are vindicated by the cases of the two broader concepts. It should be stressed that the same patterns of government behavior have been derived irrespective of the different scopes of government.

Such empirical evidence is very important in analyzing the government's performance in promoting economic stability. Therefore, it is to these issues—why the surplus-deficit

¹⁷ Defining government surplus and deficit within the scope of total government requires that it be done with reference to the concept of national income. In the exposition below, the notations used represent the following; G_c —government consumption, I_g —government gross capital formation (including gross fixed investment and inventories), S_u —current subsidies, T_r —transfer payments, F —net payment to the rest of the world, Y_g —government current revenues, D_g —depreciation of government enterprises, and S_{gn} —government current surplus.

By definition, S_{gn} is to be calculated as a residual item.

$$S_{gn} = Y_g - (G_c + S_u + T_r + F) \quad (a)$$

Further, let S_g ($S_g = S_{gn} + D_g$) stand for government gross savings to be compared with I_g . By doing so, the government surplus and deficit used here are defined, following the fiscal terminology.

$$\begin{aligned} S_g - I_g &> 0 && \text{surplus} \\ S_g - I_g &= 0 && \text{balanced} \\ S_g - I_g &< 0 && \text{deficit} \end{aligned} \quad (b)$$

These relations are developed further, using (a).

$$\begin{aligned} S_g - I_g &= Y_g - (G_c + S_u + T_r + F) + D_g - I_g \\ &= Y_g - (S_u + T_r + F) + D_g - (G_c + I_g) \end{aligned} \quad (c)$$

where the government surplus must be equal to the sum of government net revenues (i.e., $Y_g - S_u - T_r - F$) and D_g minus the government purchases of goods and services (i.e., $G_c + I_g$). The values of government surplus or deficit in the scope of total government were computed by the (c) formula.

series displayed countercyclical movements in the periods 1954-62 and why it has failed to do so since 1962—that the analysis presented below is directed.

IV. *Some Stabilizing Factors in the Fiscal Structure*

The movement of government surplus and deficit can obviously be influenced by both sides of the budget; i.e., the individual series of the government receipts or the expenditures. Therefore, it is necessary to consider receipts or expenditures separately in order to investigate which side of the budget has played a dominant role in directing the cyclical behavior of government balances.

First of all, let us begin with a discussion of the government receipts side. Several important items will be taken account of in the narrowest scope of the government—i.e., the general account.¹⁸

- (1) total government receipts
- (2) total tax yields—Treasury Bureau's data
- (3) total tax yields—Tax Bureau's data
- (4) withheld income tax
- (5) self-assessed income tax
- (6) corporate tax
- (7) liquor tax

The items (1)~(3) and the items (4)~(7) are depicted in Chart 4 and Chart 5, respectively. In drawing them, every series is composed of cyclical components adjusted for seasonal variations, random movement and finally for the secular trend.

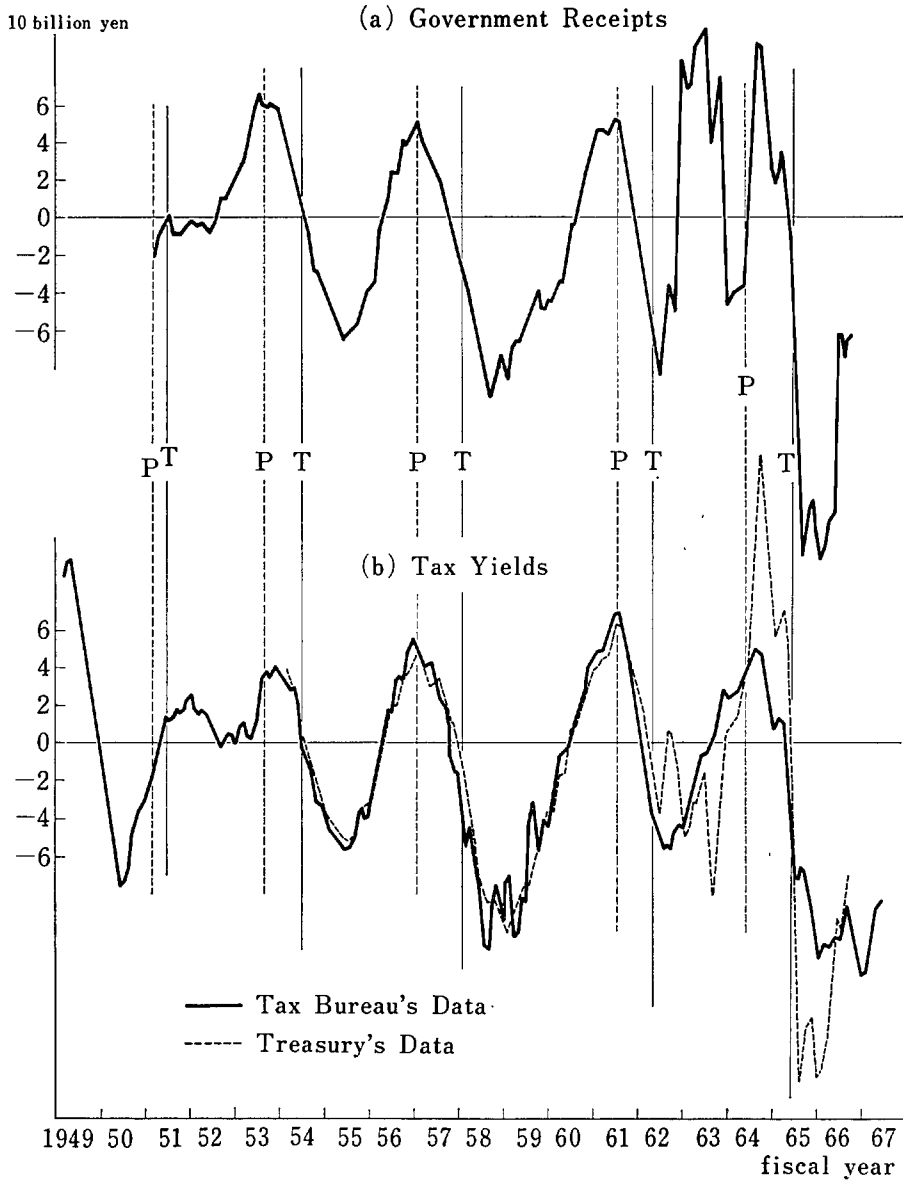
Something further then is required to explain the statistical operations. When the secular trend rises rapidly as in the postwar period of Japan, the strong trend tends to offset the influence of cyclical contractions in general business, or to make the detection of this influence difficult as noted earlier. In the case of computing the surplus-deficit series, it was not so important to eliminate the trend line from the trend-cycle composite since it could be cancelled out in the process of subtracting one series from another. However, when an individual series in the receipts or expenditure side of the budget is taken up, the importance of eliminating the trend should not be neglected. In the analysis that follows, the secular trend, which is computed by using the 40-month-moving-average method,¹⁹ is deducted from the trend-cycle composite obtained from the application of "centered twelve-month-moving-average method" to the original data.

Let us now revert to Chart 4. Three clear-cut cyclical patterns are illustrated in the series of government receipts during the period 1950-62. If government receipts are to have a countercyclical effect for the promotion of economic stability, they would have to rise during expansion and fall during contraction. It is apparent that these movements

¹⁸ Of course much research has been done within the largest scope of total government. The results of such studies have been omitted from this paper not only for the sake of brevity but also because attempts to extract and isolate cyclical components have met with little success.

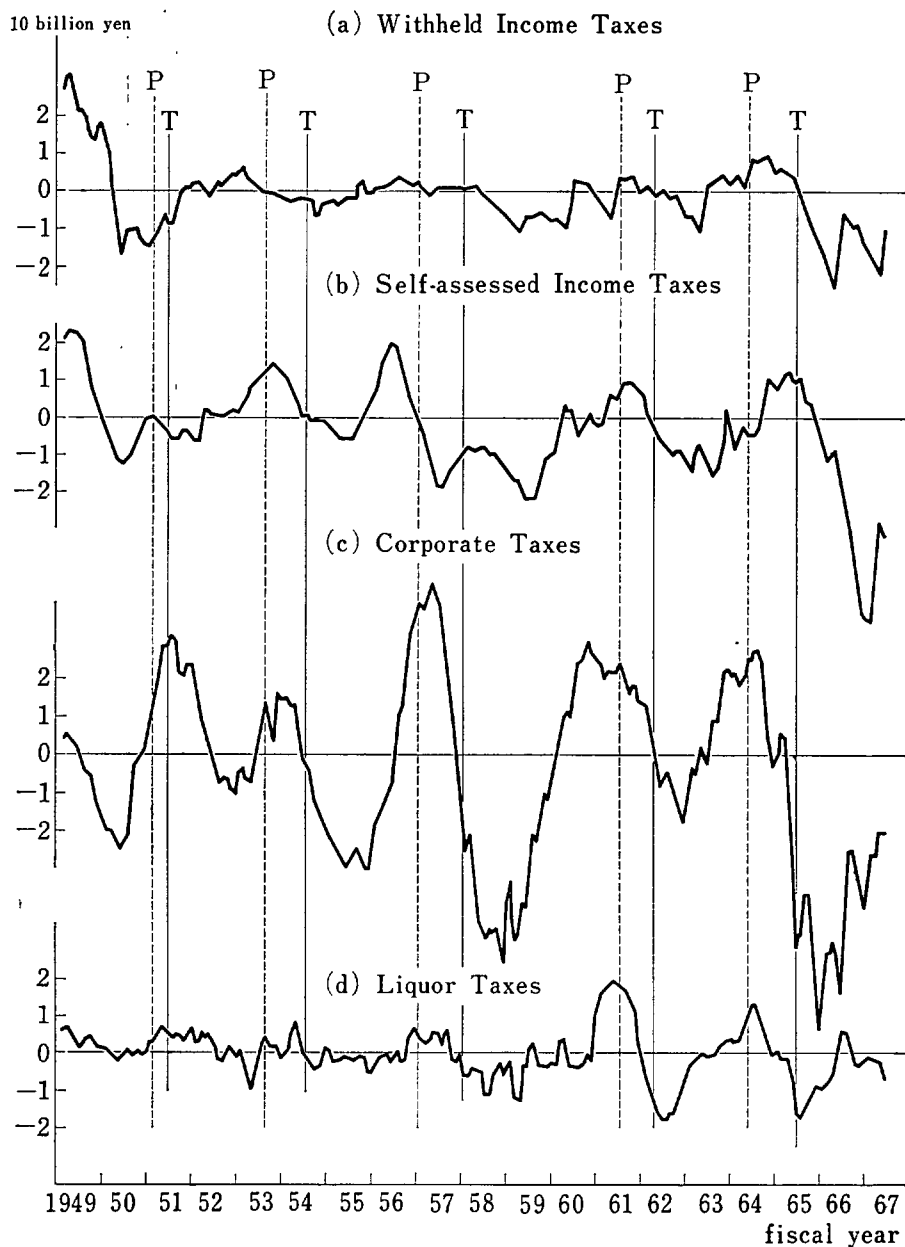
¹⁹ As a result of using the 40-month-moving-average, twenty months are dropped before and after the period of the original data used here. However, there is no problem with this dropping since we have already employed a longer period than is necessary for the analysis.

CHART 4. CYCLICAL PATTERNS OF GOVERNMENT RECEIPTS AND TAX YIELDS



Note: The scope of government here and in two subsequent Charts is limited to the general account.

CHART 5. CYCLICAL PATTERNS OF MAJOR COMPONENTS OF NATIONAL TAXES



as observed here satisfy the countercyclical condition. In fact, they corresponded closely with the business cycles as outlined by the EPA's reference dates, although there were slight lags behind the trough dates in each cycle. In particular, the peaks of government receipts were perfectly synchronized with those of the reference dates. On the other hand, the experiences for 1962-65 reveal a partial exception. A sharp drop in government receipts took place at the peak of the reference date. This is quite similar to the government surplus-deficit series as was drawn in Chart 1. Thus, it may be suggested that the variations on the revenue side can have some significant effect on the fluctuations of the government surplus and deficit.

The primary portion of government receipts consists of tax yields. As might be expected, the variations of tax yields as shown in Chart 4-(b), bear a close resemblance to those obtained from government receipts in Chart 4-(a). Two kinds of data are available in drawing the tax series, reflecting the fact that the tax collections are different from each other in terms of their time point.²⁰ For this reason, both of the tax series are depicted in the same graph. On the whole, two data can be varied almost at the same patterns. In short, the resulting changes in the tax series show very sensitive fluctuations with the tax yields rising during a business expansion and falling during a business contraction.

Next, certain general sources of taxes will be studied separately. As illustrated in Chart 5, the major four taxes are chosen, which provide approximately two-thirds of the total tax yields. The individual variations of these taxes are explained as follows.

(1) The patterns of fluctuation are very similar for the withheld income taxes and the self-assessed ones. The amplitudes of their rises and falls were considerably less than those of corporate taxes because of the successive large reductions of personal income taxes—as is verified below in Table 4. This reveals that the stabilizing potential of income tax variations has been substantially reduced. Indeed, it seems reasonable to assert that income taxes have not behaved very much in the countercyclical manner that would have been expected.

(2) Instead of the personal income taxes, it appears that the corporate taxes have played the dominant role in promoting economic stability. As seen in Chart 5, the amplitude of their changes is the biggest of the four taxes,²¹ and furthermore, the variations counteract accurately the trend of business cycles to perform well as a countercyclical device. Thus, it may be suggested that the corporate taxes were the most effective weapon of countercyclical tax policy, since it is largely responsible for the patterns displayed by the total tax yields in Chart 4-(b).

(3) The liquor taxes have, as a rule, shown no clear cyclical changes. This result is naturally to be expected because it belongs to the category of indirect taxes which are

²⁰ Tax Bureau's data reflect taxes collected by the foremost tax collection agency (e.g., post office, some agents of Tax administration Bureau or the Bank of Japan). Conversely, Treasury's data are compiled behind a few days since it usually takes awhile to send taxes to the Treasury fund through these tax collection agencies. This difference makes pretty good sense in compiling a monthly data. For illustration, let us consider some taxes, such as corporate taxes, which are collected on the final day of each month. If the last day is a Sunday or holiday, monthly data clearly represent pretty difference between Tax Bureau's and Treasury's sources.

²¹ For illustration, the coefficients of variation (i.e., standard deviation / mean) concerning three kinds of taxes are computed; withheld income taxes -5.12, self-assessed income taxes -6.01, and corporate taxes 103.53.

are insensitive to business cycles.

Having observed these facts, we can conclude that the cyclical patterns followed by total taxes—as well as government receipts—can be mostly attributed to the fluctuations of corporate taxes. The chief reason is that the corporate taxes have not experienced the significant tax-cuts which have continuously lowered personal income taxes. Though the expenditure side of the budget has not yet been examined, we have thus seen that in postwar Japan the cyclical behavior of government surplus and deficit—which is the most important variable in this analysis—has been primarily directed by the fluctuations of the corporate taxes.

We shall now shift the focus of our study briefly to the aspect of government expenditure. Using a method similar to the one employed in investigating government receipts, the following three items will be examined.

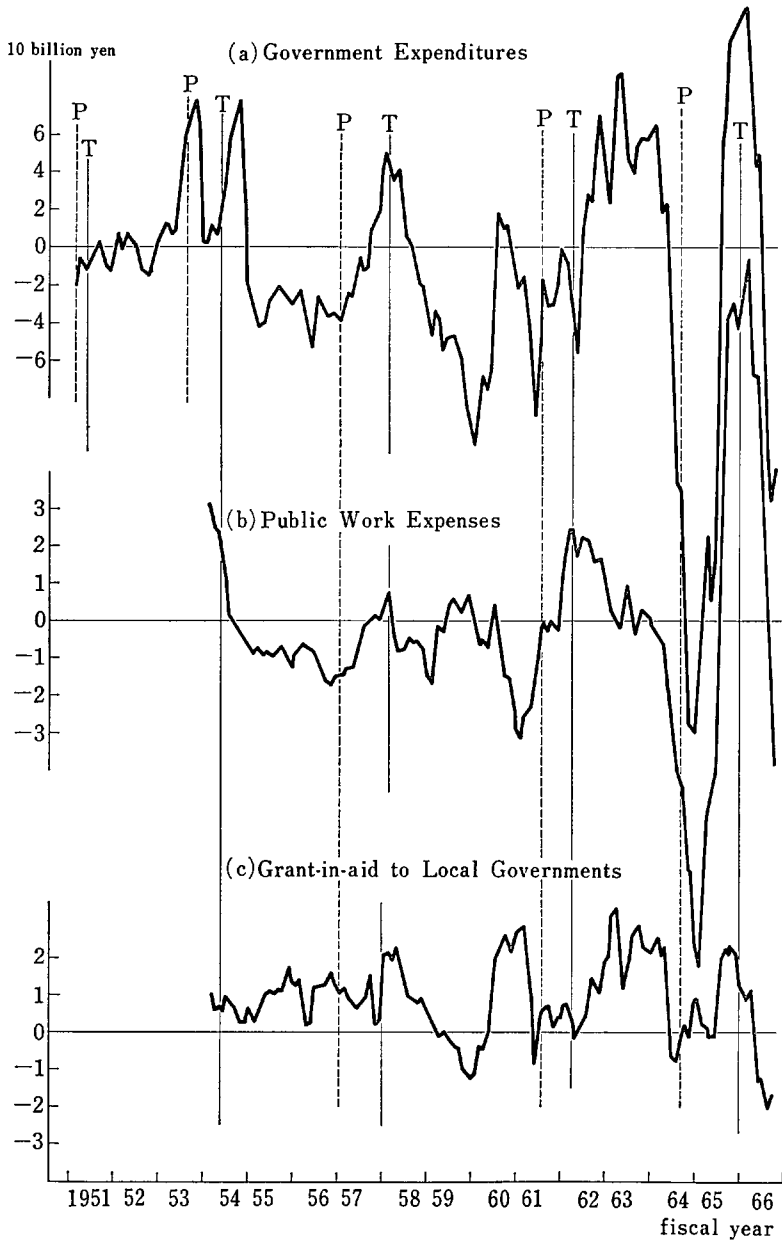
- (1) total government expenditures
- (2) public work expenses
- (3) grants-in-aid to local governments

Given the objective of economic stability, government expenditures should decline during expansions and rise during contractions in order to mitigate the fluctuations of the general economic activity. Inasmuch as Chart 6-(a) is concerned, the variations of government expenditures have not conformed systematically to the reference dates of business cycles. Indeed, they rose and fell irregularly throughout all the cycles of the postwar period, in a manner unlike that of government receipts and tax yields in Charts 4 and 5. This can be explained if we stop to examine the nature of government expenditures. The volume of government expenditures should first of all vary in accordance with the variation of expenditure for social needs; i.e., a priori importance should be placed on the government's function of resource allocation. In other words, government expenditures can be justified in part on grounds other than stabilization policy. Accordingly, when there are "mixed motives" and fiscal actions are undertaken primarily for reasons other than promotion of economic stability, there is often a negative effect on the countercyclical manipulations of government expenditures. Furthermore, it can be demonstrated, as will be verified below for the 1962-65 cycle, that expenditures have on some occasions shown a sort of bias strong enough to overcome the countercyclical effect from the revenue side and to dominate the direction of budgetary balance.²²

Despite the fact that total government expenditures have wholly been insensitive to business fluctuations, the public work expenses present one exception; that is, certain administrative procedures of accelerating and deaccelerating have been carried out in spending for a list of public works in response to the recession and recovery. For instance, the public work expenses in the general account carried over to curb inflation on a few occasions: May 1957, September 1961 and September 1967. On the other hand, an admi-

²² This is not always the case, although Samuelson argues that most of the American postwar recessions can be associated with cuts in government expenditures, especially defense expenditures. He suggests that government expenditures have acted like an exogenously disturbing factor instead of being a countercyclical device. He concludes by saying, "This brings us, by exhaustion, to government expenditure as the villain in the postwar scenarios of instability." See, P.A. Samuelson, *Stability and Growth in the American Economy* (Stockholm: Almqvist S. Whicksell, 1962), p. 30. However, in postwar Japan where defense expenditure can be safely ignored in total government expenditures, it seems inappropriate to say that government expenditure have played a major role in economic instability.

CHART 6. CYCLICAL PATTERNS OF GOVERNMENT EXPENDITURES



nistrative attempt was made to accelerate the outlays of public works to stimulate the economy in June 1965.²³ Let us now revert to Chart 6-(b) with this fact in mind. The variations of public work expenses have not been so definite as those of tax yields, but in some troughs of the reference dates (e.g., 1958, 1962, and 1965) it is possible to point out a correspondence between the peak of public work expenses and the contraction phases. Increase in public work expenses in these recession periods would probably be fortuitous since they cannot be regarded as discretionary counter-recession actions. However, they might have been helpful in stimulating the economy.

In addition, the variation of grants-in-aid to local governments is illustrated in Chart 6-(c), because it was expected that the series would reveal some sort of cyclical pattern. The reason for this is that the grants are financed by three kinds of taxes which are pretty sensitive to business fluctuations; personal income taxes, corporate taxes and liquor taxes. The result, however, did not show any meaningful pattern that had been expected.

The preceding exposition, as illustrated by Charts 1 through 6, and its findings, can

TABLE 2. CORRELATION COEFFICIENTS AMONG GOVERNMENT BUDGETARY BALANCES (*d*), TAX YIELDS (*t*) AND GOVERNMENT EXPENDITURES (*g*)

I. The 2nd Cycle (Oct. 1951—Nov. 1954)				IV. The 5th Cycle (June 1962—Oct. 1965)			
	<i>d</i>	<i>t</i>	<i>g</i>		<i>d</i>	<i>t</i>	<i>g</i>
<i>d</i>	1.0000	-0.3256	-0.4373	<i>d</i>	1.0000	0.3956	-0.9164
<i>t</i>		1.0000	0.7712	<i>t</i>		1.0000	-0.3232
<i>g</i>			1.0000	<i>g</i>			1.0000
$\bar{R}=0.3812$				$\bar{R}=0.9176$			
$N=38$				$N=37$			
II. The 3rd Cycle (Nov. 1954—June 1958)				V. The 3rd and 4th Cycles (Nov. 1954—Oct. 1962)			
	<i>d</i>	<i>t</i>	<i>g</i>		<i>d</i>	<i>t</i>	<i>g</i>
<i>d</i>	1.0000	0.8973	-0.6200	<i>d</i>	1.0000	0.8079	-0.5802
<i>t</i>		1.0000	-0.2419	<i>t</i>		1.0000	-0.0517
<i>g</i>			1.0000	<i>g</i>			1.0000
$\bar{R}=0.9884$				$\bar{R}=0.9707$			
$N=44$				$N=96$			
III. The 4th Cycle (June 1958—Oct. 1962)				VI. The Whole Period (Oct. 1951—Oct. 1965)			
	<i>d</i>	<i>t</i>	<i>g</i>		<i>d</i>	<i>t</i>	<i>g</i>
<i>d</i>	1.0000	0.7752	-0.6141	<i>d</i>	1.0000	0.4761	-0.7923
<i>t</i>		1.0000	-0.0469	<i>t</i>		1.0000	-0.0226
<i>g</i>			1.0000	<i>g</i>			1.0000
$\bar{R}=0.9658$				$\bar{R}=0.9141$			
$N=53$				$N=169$			

Note: 1) The figures in sub-tables are partial correlation coefficients. \bar{R} and N stand for multiple correlation coefficients adjusted for a degree of freedom and sample sizes, respectively.

2) The scope of government is limited to the general account.

²³ See The Japanese Economic Council, Committee for Countercyclical Policy, ed., *Countercyclical Policy in the Future*. (in Japanese), 1969, pp. 9-19.

be tested and corroborated in greater detail by computing the partial correlations coefficients among the fiscal variables. First, Table 2 indicates a matrix of partial correlation coefficients relating government budgetary balances (d) to tax yields (t) and government expenditures (g), broken up into six time periods in the scope of the general account. All the variables used here are composed of the cyclical components alone with d derived from series (2) in Chart 1, t from the Tax Bureau's data in Chart 4 and g from series (a) in Chart 6. The aim of the correlation analysis is to establish by a more precise statistical procedure which factors from either side of the budget have had a more dominant effect on the variation of government surplus and deficit. Table 2 is divided into six cases, consisting of alternative sets of the four reference cycles; that is, the four cases I-IV cover each of the four cycles, case V consists of the composite of the third-fourth cycles and the last case encompasses the whole period, taking all the cycles in.

Inspection of the table suggests the following four facts concerning the six cases;

- (1) In both case II and III in which a clear-cut countercyclical effect has been noted, the correlation coefficients R_{dt} between the variable d and t are larger than the coefficient R_{dg} between the variable d and g . This reveals that the variable t can affect the variation of government surplus and deficit more than the variable g can.
- (2) In the 1951-54 cycle (i.e., case I) when the cyclical patterns of government surplus and deficit have not been found yet, the multiple correlation coefficient R , R_{dt} , and R_{dg} show all low values, and they are not statistically significant at the 5 percent level. Accordingly, it seems appropriate to say that among the three variables, d , t , g , there was no meaningful relation.
- (3) The primary reason why the countercyclical effect of d tended to disappear in the 1962-65 cycle is clarified in case IV, reflecting a low value of R_{dt} and a high value of R_{dg} . That is to say, the variations of d can be mostly associated with those of g , not t . Indeed, the countercyclical variations of tax yields as was seen in Chart 4 have no relation with those of government surplus and deficit. This leads to the implication that g became a dominant factor in explaining the variations of d and as a result displayed a destabilizing effect.
- (4) The cases V and VI are presented to clarify the above discussions. The composite results of the 1954-58 and 1958-62 cycles (i.e., case V) carry a large value of R_{dt} , indicating the substantial stabilizing effect of taxation. Taking up all the cycles as seen in case VI, however, the value of R_{dg} is larger than that of R_{dt} . It appears that the 1962-65 cycle experience has determined the direction of the whole period.

Next, let us turn our attention to Table 3, where several variables are specially focused upon. The variables selected for more detailed study are as follows; withheld income taxes (t_w), self-assessed income taxes (t_s), corporate taxes (t_c) and public work expenses (g_w). The statistical technique is similar to the previous one, although the variable g_w alone is dropped in the 1951-54 cycle because of the lack of data. It is obvious that the results of the correlation analysis can support the observation made from Charts 1, 4, and 5. That is:

- (1) the variable t_c is far and away the most important of all in the cases II and III. In fact, the correlation coefficients R_{dte} between d and t_c show the highest values during the periods under consideration. On the other hand, in both the 1951-54 and 1962-65 cycles (i.e., cases I and IV), the values of R_{dte} are not significant at the 5 percent level.

TABLE 3. CORRELATION COEFFICIENTS AMONG GOVERNMENT BUDGETARY BALANCES (d), WITHHELD INCOME TAX (t_w), SELF-ASSESSED INCOME TAX (t_s), CORPORATE TAX (t_c), AND PUBLIC WORK EXPENSES (g_w)

I. The 2nd Cycle (Oct. 1951—Nov. 1954)

	d	t_w	t_s	t_c
d	1.0000	0.0389	0.5662	-0.4256
t_w		1.0000	0.0245	-0.2321
t_s			1.0000	-0.6891
t_c				1.0000
$\bar{R}=0.5133$				
$N=38$				

IV. The 5th Cycle (June 1962—Oct. 1962)

	d	t_w	t_s	t_c	g_w
d	1.0000	0.7161	0.5536	0.0684	-0.9156
t_w		1.0000	0.5286	-0.1783	-0.8206
t_s			1.0000	0.4855	-0.6580
t_c				1.0000	-0.1769
g_w					1.0000
$\bar{R}=0.8466$					
$N=37$					

II. The 3rd Cycle (Nov. 1954—June 1958)

	d	t_w	t_s	t_c	g_w
d	1.0000	0.3851	0.5290	0.6900	-0.6648
t_w		1.0000	0.3831	-0.3075	-0.5170
t_s			1.0000	0.3214	-0.2979
t_c				1.0000	-0.1376
g_w					1.0000
$\bar{R}=0.9627$					
$N=44$					

V. The 3th and 4th Cycles (Nov. 1954—Oct. 1962)

	d	t_w	t_s	t_c	g_w
d	1.0000	0.4397	0.1363	0.7066	-0.3914
t_w		1.0000	0.5405	0.2912	-0.2202
t_s			1.0000	0.4565	0.0000
t_c				1.0000	-0.1523
g_w					1.0000
$\bar{R}=0.8466$					
$N=96$					

III. The 4th Cycle (June 1958—Oct. 1962)

	d	t_w	t_s	t_c	g_w
d	1.0000	0.4951	-0.0379	0.7239	-0.3257
t_w		1.0000	0.6174	0.7989	-0.0814
t_s			1.0000	0.5032	0.1463
t_c				1.0000	-0.1483
g_w					1.0000
$\bar{R}=0.8568$					
$N=53$					

VI. The Whole Period (Oct. 1951—Oct. 1965)

	d	t_w	t_s	t_c	g_w
d	1.0000	0.4782	0.4155	0.3913	-0.7910
t_w		1.0000	0.4937	0.1984	-0.4203
t_s			1.0000	0.4560	-0.4369
t_c				1.0000	-0.1504
g_w					1.0000
$\bar{R}=0.8466$					
$N=132$					

Note: See the footnotes of Table 2.

- (2) The coefficients R_{dtw} between d and t_w , and R_{dts} between d and t_s , do not necessarily carry high values. This suggests that the income taxes do not play any important role creating the cyclical movements of government surplus and deficit.
- (3) The coefficient R_{dgw} between d and g_w displays the highest negative value in the 1962-65 cycle. This implies that public work expenses have significantly contributed to the formation of the variations of government surplus and deficit, but they did not play a stabilizing role in the economy because during this period government surplus and deficit showed no countercyclical pattern. Conversely, it seems that

they became a factor of disturbance to economic stability because they were strong enough to cancel out the countercyclical movements of tax yields which were seen in Charts 4 and 5. By contrast, a substantial negative value of R_{dgv} can be seen in the 1954-58 cycle. In this respect, g_w may have played a considerable role on the countercyclical variations of d .

To sum up the above discussion, the countercyclical variations of government surplus and deficit during the periods 1954-62 (i.e., the third and fourth cycles) have chiefly been due to those of tax yields, particularly corporate taxes. In contrast to this, the experiences of the 1962-65 cycle or 1951-54 cycle can be explained by the fact that a stabilizing effect of corporate taxes has been distorted by other forces (e.g., public work expenses) or has not yet fully felt. Thus, it must be acknowledged that the corporate taxes have been the most influential factor for economic stability in the fiscal system.

Hence, it is necessary to state briefly how the corporate taxes have been able to vary

TABLE 4. REDUCTIONS OF PRIMARY NATIONAL TAXES

(billion yen)

fiscal year	personal income tax	corporate tax	liquor tax	sugar excise tax	gasoline tax	commodity tax	stamp revenues	others	total
1950	135.8	24.4	0	0	0	0	2.0	44.6	206.8
1951	60.5	4.5	44.0	+5.8	2.5	10.2	0.1	+2.7	113.3
1952	112.7	+19.1	0	+5.7	0	2.1	0	+0.4	89.5
1953	77.3	15.5	38.4	+6.0	0	3.0	0	+3.8	124.4
1954	31.4	2.6	+3.4	+6.2	+3.8	+1.1	+5.5	2.9	16.9
1955	53.3	12.0	0	0	0	0.6	0	0.2	66.1
1956	22.6	+14.4	0	0	0	0.3	0	+7.0	1.5
1957	110.2	+21.9	0	0	+22.8	0	+3.0	+0.8	61.7
1958	6.3	21.5	6.3	0	0	0	0	3.2	37.3
1959	23.1	3.8	0	0	+23.3	3.1	0.5	2.3	9.5
1960	0	0	0	0	0	0	0	+6.6	+6.6
1961	56.3	39.9	0	0	+21.8	0.4	0	+0.4	74.4
1962	50.3	1.3	37.2	0	0	20.2	1.8	5.5	116.4
1963	66.8	+12.8	0	0	0	0	0	+4.2	49.8
1964	74.5	58.6	0	0	+25.4	0	0	5.1	112.8
1965	65.4	56.6	0	0	0	+3.4	0.2	+7.2	111.6
1966	158.3	98.7	0	0	0	34.7	0.2	18.7	310.6
1967	92.5	30.3	0	0	0	0	+30.1	+4.9	94.0
1968	125.1	0	+50.1	0	0	+7.0	0	0	68.0
1969	183.0	+2.4	0	0	0	0	0.4	0	181.0
1970	288.7	+75.2	0	0	0	+8.0	0	0	205.5
1971	206.9	+12.1	0	0	0	0	0.4	+118.0	77.2

Source: Internal Material of Tax Bureau, Ministry of Finance.

Note: 1) Estimates computed by Tax Bureau on the ground of hypothetical situations in which tax laws remained unchanged.

2) Plus signs stand for tax increases; zero means no tax changes.

countercyclically. This will be argued below in connection with the changes in the tax laws. There are essentially two aspects to the problem. Special attention should be paid to two different devices in the operation of fiscal policy; i.e., discretionary actions and built-in stabilizers. For one thing, it is the intention of the government to use the fiscal weapons of government expenditures and taxation consciously or with discretion to compensate for business fluctuations. The other is that the government expects the forces built into the fiscal system to be working automatically as a countercyclical device. Of course, it would be desirable to separate the two aspects of fiscal policy from each other in view of the stabilization policy, but it is practically impossible to disentangle them. The historical records of government receipts and expenditures are presented as a mixed compilation, influenced by both the discretionary actions and built-in stabilizers. For example, it is difficult to say to what extent the variations of the tax yields in the historical records have been affected by one factor and to what extent they have been associated with the

TABLE 5. TAX INCREASE OR REDUCTION IN RESPONSE
TO THE ASPECTS OF BUSINESS CYCLES

fiscal year	personal income tax	corporate tax	liquor tax	sugar excise tax	gasoline tax	commodity tax	stamp revenues	others	total
1950	—	—	0	0	0	0	—	—	—
1951*	⊖	⊖	⊖	+	⊖	⊖	⊖	+	⊖
1952	—	⊕	0	⊕	0	—	0	⊕	—
1953*	⊖	—	—	+	0	⊖	0	+	⊖
1954*	⊖	⊖	+	+	+	+	+	⊖	⊖
1955	—	—	0	0	0	—	0	—	—
1956	—	⊕	0	0	0	—	0	⊕	—
1957*	⊖	+	0	0	+	0	+	+	⊖
1958*	⊖	⊖	⊖	0	0	0	0	⊖	⊖
1959	—	—	0	0	⊕	—	—	—	—
1960	0	0	0	0	0	0	0	⊕	⊕
1961*	⊖	⊖	0	0	+	⊖	0	+	⊖
1962*	⊖	⊖	⊖	0	0	⊖	⊖	⊖	⊖
1963	—	⊕	0	0	0	0	0	⊕	—
1964*	⊖	⊖	0	0	+	0	0	⊖	⊖
1965*	⊖	⊖	0	0	0	+	⊖	+	⊖
1966	—	—	0	0	0	—	—	—	—
1967	—	—	0	0	0	0	⊕	—	—
1968	—	0	⊕	0	0	⊕	0	0	—
1969	—	⊕	0	0	0	0	—	0	—
1970*	⊖	+	0	0	0	+	0	0	⊖
1971*	⊖	+	0	0	0	0	⊖	+	⊖

Note: 1) Plus signs designate tax increases, minus signs tax decreases, and zero indicates either no tax change or negligible change.

2) Circles around plus or minus signs are regarded as a countercyclical device.

3) The asterisks in the first column indicate, as a very rough guide, the recession years.

other. If the tax system were to remain unchanged over a fairly long period of time, we might assume that the variations of tax yields during this period can largely be attributed to the operation of built-in stabilizers. However, it is almost impossible to find in practice such a long-range period of unchanged tax system in postwar Japan.

In order to appraise the changes of tax yields in view of their countercyclical effect, it is important to have a good grasp of the changes in tax legislation and their relation to the state of business fluctuations. Tables 4 and 5 are prepared to deal with this. We have compiled the reductions or increases of the major national taxes in Table 4, while Table 5 relates on an annual basis the direction of the changes in the tax legislation as compared to the stages of business expansion and contraction. It is easily recognized from Table 4 that the main objective of the postwar tax policy has been the continuous reduction of personal income taxes. In fact, tax reductions have been implemented every year—except in 1960—without special reference to business trends. The tax reductions which have been legislated conform with some considerations other than that of economic stability—i.e., tax burden.

On the other hand, Table 5 shows the relation of the changes in the tax laws to the stages of business cycles, although it is not quite satisfactory.²⁴ In this table, plus signs designate tax increases in terms of rate increases and / or exemption decreases; minus signs indicate tax reductions in terms of the opposite operations; and zero indicates either no change or negligible change. Furthermore, the tax legislation changes that conform countercyclically to business cycles are circled; i.e., circles around minus signs in business contractions or plus signs in expansions reveal a countercyclical direction. In each of the contraction years such as 1953-4, 1957-8 and so on, it should be noted that tax reductions were not a part of any discretionary policy, as typified by the case of personal income taxes. It is likely that the coincidence between tax reductions and business contractions may prove to be desirable, even if they just occurred unintentionally. Indeed, the well-timed tax cuts might have helped somehow to cushion the decline, but was undertaken for a quite different reason—i.e., to mitigate the tax burden of taxpayers from the viewpoint of tax equity. Thus it seems safe to conclude that in the postwar period of Japan, taxation was not subject to discretionary manipulations in the interest of economic stability. If it had been operated with stabilization in mind, no tax cuts by means of the legislative changes should really have been required at all during the business expansions.

Considering the basic aim of the tax policy, it seems doubtful that the discretionary actions can be assigned much importance in compensating for the business fluctuations. Emphasis, however, must be placed on the fact that the variations of government receipts and tax yields have actually behaved towards promoting economic stability during a specific period, despite the adverse or perverse effect that a large amount of tax reductions have had. In order to explain this interesting evidence, we need to shift our focus to another side of countercyclical devices; i.e., the built-in tax stabilizers. Since the discretionary tax actions have proved to be ineffective in view of the stabilization policy, it must be stressed that

²⁴ The statistics concerning the tax reductions or increases by means of the legislative changes are available only annually. Obviously, annual data of tax legislative changes cannot be adequate to be contrasted with the stages of business conditions. Therefore, contraction or expansion years as seen in the first column of Table 5 should not be regarded as an exact counterpart, but as an approximation for the purpose of exposition.

the cyclical behavior of government receipts, and in turn government budgetary balances, primarily depend on the strong working of built-in flexibility in the tax system. If the tax laws had not been reformed so often, the cyclical patterns of tax yields could have been depicted much more clearly.²⁵ Therefore, it seems appropriate to conjecture that the role of built-in stabilizers in the tax system has worked greatly during the postwar period of Japan.

As opposed to personal income taxes, the effectiveness of the built-in stabilizers of corporate taxes is worth noting. The corporate tax reduction was relatively small as compared with the case of personal income taxes. It may be suggested that there was much more room for the working of built-in stabilizers in the corporate taxes. Moreover, the corporate taxes have occasionally been even increased countercyclically, although on a very small scale, as evidenced by a few circles around plus signs in Table 5. These factors concerning the changes in the tax laws indicate why clear-cut cyclical variations of corporate taxes are so clearly evident, compared with the personal income taxes in which no cyclical behavior can be seen at all due to substantial distortions of tax cuts.

To recapitulate, the dominant and most effective countercyclical device of government fiscal activity in postwar Japan has been the built-in stabilizers regulating tax yields,²⁶ most importantly corporate taxes.

V. *Concluding Remarks*

The basic objective of this study was to investigate the actual performance of fiscal policy in postwar Japan and determine whether or not in practice it has been conducive to economic stability. In dealing with this question, the NBER method was primarily utilized in the examination of monthly data depicting the cyclical behavior of the several elements of government fiscal activity; e.g., receipts, expenditures, and surplus and deficits in the government accounts. The NBER method with its emphasis on a thorough investigation of empirical evidence was thought to be particularly suited for this study.

When taking a general over-view of the actual performance of government fiscal operations pursued during the postwar period, the outlook for finding substantial evidence that the government fiscal actions has contributed to economic stability appears unpromis-

²⁵ There is good evidence to support this reasoning. To illustrate, let us revert to Table 4. The year 1960 should be noted as the exceptional year when no reductions of major taxes took place. This corresponds with the fact that a clearer peak of tax series was demonstrated in the years 1960-61 in Chart 4 than in any other years. The reason for this is that the resulting increases in tax yields during the disputed period was an actual amount that automatically followed from an increase of tax base, which did not include any downward adjustments made by the legislative reduction of taxation.

²⁶ No attempt has been made to estimate directly the effectiveness of built-in stabilizers. If we make an attempt at estimation, much effort must be made to correct the tax yields over a period of years in the form of what they would have been if the tax law had remained fixed. In the United States, there have been a great number of attempts to calculate the corrected tax yields, assuming a specific tax rate and exemption. It is, however, almost impossible to attempt those estimations in Japan, since the tax law has been changed too often and has never remained constant. For a good example of correcting the tax yields, see J.A. Pechman, "Yield of the Individual Income Tax during a Recession," *Policies to Combat Depression*, Universities-National Bureau Committee for Economic Research (Princeton: Princeton University Press, 1956); Leo Cohen, "An Empirical Measurement of the Built-in Flexibility of the Individual Income Tax," *American Economic Review*, May 1959.

ing considering the constraints imposed on countercyclical movements by the empirical rules which have guided the government fiscal activity. However, contrary to these initial expectations, the results of this study indicate the effective operation of some countercyclical devices.²⁷

In conclusion, the principal findings of the analysis are summed up as follows:

- (1) Cyclical behavior of government surplus and deficit indicates a much more clear-cut countercyclical pattern than was expected in advance. More specifically, the surplus-deficit series depict a form of cyclical variation, and furthermore they correspond rather well with the peak or trough of the EPA reference dates. In particular, this is the case with the two cycles of the 1958-62 period. Conversely, no evidence has been seen in both the pre-1958 and post-1962 cycles to support the cyclical pattern of government surplus and deficit. Some reasons need to be spelled out. For one thing, in the pre-1958 period the business cycles have not yet appeared in a whole economy for the sake of the imperfect restoration of the postwar economy. The other is that in the post-1962 cycle the Japanese economy as a whole has come to a turning point in its economic structure. It must be emphasized that such evidence can be verified irrespective of the different scopes of government chosen for study; i.e., general account, central government and total government.
- (2) More emphasis has been given to the receipt side of the budget as the factor dominating the cyclical patterns of government surplus and deficit. The analysis was developed by drawing each series of the receipt or expenditure side of the budget in the graph, followed by computing the correlation coefficients among the relevant variables. As a result of the analysis, it was possible to conclude that the receipt side, composed of tax yields, played a dominant role in forming the countercyclical movements of government budgetary balances, and that the expenditure side displayed some rather destabilizing effects.
- (3) In examining the countercyclical effect of some important items in the budget by the same method, it must be acknowledged that the corporate taxes, which amounted to approximately 30 percent of all tax yields during the disputed period are primarily responsible for the patterns displayed by total receipts and in turn by the surplus-deficit series. Furthermore, it appears valid to hypothesize that the built-in stabilizers of the tax system, especially the corporate taxes, have generally been more helpful, as compared to deliberate actions, in counteracting business fluctuations. Thus, in recounting the fiscal history of postwar Japan, special attention must be given to the working of built-in stabilizers of the corporate taxes in considering stabilization policy.

²⁷ To make the result of the analysis more persuasive, it is necessary to ascertain the relative size of the fiscal measures as compared to aggregate economic activity (e.g., GNP). The effectiveness of fiscal actions in promoting economic stability is clearly dependent upon its magnitude and influence within the scope of the entire economy. Parenthetically, a comparison is made between the changes of the fiscal variables and GNP between the peaks and troughs of every business cycle. For example, the ratios of the increment of government receipts or expenditures relative to that of GNP—i.e., the relative importance of government fiscal positions in a whole economy—range approximately from 7 percent to 40 percent with a few unusual exceptions at each phase of expansion and contraction. On the other hand, the ratios of budgetary balances to changes in GNP—i.e., the net contribution of fiscal actions towards stabilizing business fluctuations—are smaller, but they range from 1 percent to 25 percent with the exception of a few phases. Having compared the changes of the fiscal variables with those of the GNP, it may be suggested that the magnitude of the fiscal measures have been of substantial weight in the economy.