

The Initial Effects of Federal Budgetary Changes on Aggregate Spending*

Statistics describing how much the Federal Government spends and how much it collects in revenues are available in great quantity and on a variety of different accounting bases.¹ Despite this wealth of data, however, and despite the increasing importance of fiscal policy as a tool for promoting cyclical stability and long-run growth, the task of assessing the precise impact of Federal budgetary operations on aggregate production and income remains difficult. This article presents one possible technique for quantifying the effect on the economy implicit in any particular set of changes in Federal budgetary programs. Essentially, the technique seeks to measure the direction and size of the budget's initial influence on aggregate demand through changes in Federal outlays and through the direct effects on private incomes associated with changes in tax rates.

It should be stressed at the outset that no single measure of fiscal impact—including the relatively simple and tentative one presented here—will prove satisfactory in all analytical situations. The virtue of the procedure here presented is that it attempts to distinguish the independent effects of the budget on the economy from the “feedback” effects of the economy on the budget, effects which op-

erate mainly on the revenues side of the budget. In this respect, the technique developed in this article has a goal similar to that of the so-called “full employment surplus”, a concept which also attempts to separate out the feedback effects and which has become familiar from the reports of the President's Council of Economic Advisers.² The concept of the full employment surplus, of course, goes beyond this limited end; in particular, the concept has been used in discussions of the upward trend in tax revenues that would be generated by the economy as it approaches or maintains full employment of a growing labor force and productive capacity. The technique here discussed avoids the complications that arise in estimating tax revenues at a hypothetical full employment level of activity. The current employment and output situation is taken as given, and the computations are designed only to estimate the direct effect on total spending of actual changes in Federal expenditures and tax rates.

As will be apparent from the discussion below, the basic methodology and all the numerical computations shown in this article rest on a long series of assumptions, any one of which might prove to be a fit subject for lengthy debate. Moreover, there are some aspects of the over-all economic impact of Federal fiscal operations that cannot be examined at all in the context of the technique

* A number of persons in the Research Department of this Bank have worked toward developing the method of analysis presented here. Camille B. Pantuliano had primary responsibility for the preparation of this article.

¹ See Joseph Scherer, “A Primer on Federal Budgets”, this *Review*, April 1965, pp. 79-88.

² The reader who wishes to examine the concept of the “full employment surplus” may consult an article by Robert Solomon, “A Note on the Full Employment Surplus”, *Review of Economics and Statistics*, February 1964, pp. 105-108.

discussed here. Thus, even with the help of this technique, or any other such simple procedure, the analyst will still find it imperative to undertake a thorough investigation of all the circumstances prevailing in the particular period in which he is interested.

SUMMARY OF BASIC APPROACH

The technique described here is designed to measure the initial and direct effects of the changes in the Federal budget on aggregate spending by computing a weighted sum of the change in total Federal expenditures and the change in aggregate after-tax incomes due to statutory or administrative modifications in the Federal tax system. Additions to expenditures and reductions in tax rates are considered to be "stimulative", while reductions in expenditures and tax rate increases are considered to be "restrictive". The aim of the procedure is to assess the combined effects of expenditures and tax rate changes in pushing up or pulling down aggregate spending in a given period relative to spending in the immediately preceding period. Consequently, changes on both the expenditures and tax sides are measured in terms of levels prevailing in the previous period.

In the case of expenditures, the relevant figure is simply the absolute dollar amount of change from period to period, modified for certain timing factors (and adjusted for seasonal variation when periods of less than one year are used as the unit of analysis). For reasons explained in the Appendix, the data most suitable for this analysis represent a compromise between the "cash" and the "national income accounts" expenditures figures of the Federal budget. A more sophisticated technique would obviously also take into account the expenditures "mix", since it is very likely that different types of Government expenditures will have different effects on the economy. (One example that is frequently listed is the distinction between direct purchases of goods and services and "transfer" payments such as social security payments which stimulate the demand for goods and services less directly.) Such refinements can be built into the technique once further research on Government spending by components has yielded workable empirical generalizations.

The procedure for estimating the effects of changes in tax rates is somewhat more complex. Essentially, an attempt is made to estimate the extra amount of income left in (or taken from) private hands as a result of the tax rate change. Clearly, this estimate should eliminate feedback effects—the effects of tax-change-induced variations in the tax base, and hence in tax revenues. Therefore, the evaluation is made on the basis of levels of personal

income or corporate profits (or other relevant tax bases) prevailing in the period before the tax change becomes effective. This figure is then multiplied by 90 per cent in order to obtain an estimate of the initial and direct effect on aggregate spending of the tax rate change itself.³ The over-all impact of fiscal operations in any period is said to be stimulative when the net outcome of changes on the expenditures and tax sides so computed is positive. When the net outcome is negative, fiscal operations are said to be restrictive.

It should be noted explicitly that the fiscal impact measure developed here differs conceptually both from levels of the actual surplus or deficit—however measured in terms of the standard budget accounts—and from changes in the surplus or deficit. The amount of the deficit at any one time depends of course on the level of expenditures relative to revenues, while the present concept takes into account changes in both expenditures and tax laws. Moreover, since the level of the standard deficits depends upon the level of revenues actually realized rather than merely upon changes in the tax laws, it is the net result of two factors: the effects of the budget on the economy, and the effects of the economy on the budget. The latter represents mainly the previously mentioned feedback of changes in personal income and corporate profits on the tax receipts of the Federal Government. Since the present procedure seeks to measure the "independent" impact of budget changes on the economy, this independent effect must be isolated from the feedback effects.

The same factors account for the conceptual difference between changes over time in the realized deficit or surplus on the one hand, and the present measure on the other hand. Changes in the deficit, of course, depend upon changes in expenditures and changes in realized revenues. The measure developed here does make use of changes in expenditures, but on the revenues side it records only the effects on income due to changes in tax laws. Suppose, for

³ The 90 per cent figure is based on the fact that consumers on average tend to lay out a little more than 90 per cent of their after-tax (or "disposable") income for "personal consumption expenditures", while the remainder of disposable income is saved. This 90 per cent weight was also—somewhat arbitrarily—applied to the dollar amounts released by corporate tax reductions. Available data were not helpful in determining a more appropriate weight for corporate tax changes. Imperfect as it is, this method does allow for the virtual certainty that tax reductions (and increases) have a slightly smaller initial impact on the economy than expenditure increases (and reductions). The alternative of treating personal and corporate tax cuts as equivalent to expenditure increases (and tax increases as equivalent to expenditure reductions) would most likely lead to overestimates of the fiscal impact from tax changes.

example, that expenditures change by a constant amount from year to year and that there are no changes in the tax laws. In such a case, the concept here developed would show a constant amount of fiscal stimulus in each year, which would correspond to the change in expenditures. If the economy were growing, however, actual tax receipts would be growing from year to year. Hence the actual deficit or surplus and changes in these figures would probably vary from year to year, while the present measure would remain constant, as noted.

LIMITATIONS OF BASIC APPROACH

Since the procedure is designed solely to measure the initial and direct effects of changes in fiscal operations on aggregate demand, a change in expenditures or in tax rates is allowed to affect the computations only for the period in which the change takes effect. If the expenditures or tax change remains in effect during subsequent periods, the economy will of course behave differently in those periods than if the change had never been made. In the present technique, however, the test is whether additional stimulus is being provided relative to the previous period. Thus, the assumption is made that a tax cut or an increase in expenditures will raise aggregate demand to a new higher level during the period in which the budgetary change occurs. The mere continuance of a tax cut or of an already elevated level of expenditures in subsequent periods is not considered as an additional stimulus causing demand to rise still further.⁴

Thus, the technique does not deal with the secondary repercussions of fiscal operations. This is certainly not to deny the occurrence of such repercussions. It is usually assumed that additional disposable income resulting from a tax cut will be spent and that the additional incomes so generated will go on to stimulate still further spending, via the so-called "multiplier" process. This process is likely to operate with lags. Therefore, the economy may continue to move up in subsequent periods as a result of the initial momentum generated by a tax cut even though no further cuts take place. An analysis of the precise size and timing of these secondary effects would be both necessary and worthwhile to attempt, but would go beyond the bounds of this article.

Some further limitations of the procedure should be mentioned explicitly. First, it does not yield a measurement of the adequacy of fiscal policy in attaining full employment goals. Second, this measure gives no indication of the effect on the economy that occurs through the growth of Government revenues with the growth in the economy. (The "full employment surplus" concept does give such an indication, as noted earlier.) The present analysis skirts these issues by concentrating strictly on the narrower question whether changes in the budget are tending to push up or pull down aggregate demand from the level of the preceding period. Naturally, this also means the sacrifice of some of the valuable results yielded by the "full employment budget" analysis.

Third, the technique described here does not take account of the impact of fiscal operations on the capital market, interest rates, or liquidity. For example, a fiscal program that is stimulative in terms of the present analysis might—though need not—involve a cash deficit requiring the flotation of additional Government securities. This additional supply of securities in the market might, in turn, tend to push up interest rates, make funds more expensive for private borrowers, and possibly discourage private demands for funds. This process could conceivably offset part or all of the fiscal stimulus as here measured. Therefore, such possibilities should be explored in a more nearly complete analysis of fiscal effects on the economy than that here given.

Fourth, the present technique cannot, of course, take any account of the "psychological" effects of fiscal operations. There is no way of attaching a dollar-and-cents figure to the contribution to business optimism in much of 1963 made by the widely held expectation that a tax cut would eventually be enacted. Similarly, the prospect of a particularly large budgetary deficit might introduce a note of uneasiness into business sentiment that could not be readily measured.

In addition to these broad considerations, two particularly thorny technical problems concerning the data had to be resolved and should be mentioned before the results are presented. (Most of the technical problems are left for the Appendix.) One of these problems concerns the treatment of Federal lending activity; the other involves the treatment of corporate taxes.

Federal lending obviously shares some, but not all, of the characteristics of outright expenditures. On the one hand, it is in fact stimulative insofar as the borrowers will spend much, if not all, of the proceeds on goods and services. On the other hand, the borrowers assume a liability which may dampen the stimulative effects significantly. There is no clear-cut answer to the question

⁴ In somewhat the same sense, a rise in business spending on plant and equipment may be thought of as a stimulus for aggregate demand to rise in the period in which it occurs and yet not be counted as a further stimulus if plant and equipment outlays remain at the same higher level in subsequent periods.

whether Federal lending should be included in or excluded from the fiscal stimulus. Therefore, the figures are given on both bases. (Further difficult problems related to the impact of Federal lending are treated in the Appendix.)

In the case of corporate tax changes, the issues—which are also treated more fully in the Appendix—revolve around the choice of the proper basis for the timing of the impact of such changes. It makes a great deal of difference whether one chooses the time of accrual of tax liabilities or the time of cash payments. In the absence of a convincing rationale for the exclusive choice of either basis, a simple arithmetic average of the two possibilities was computed for the present purpose.

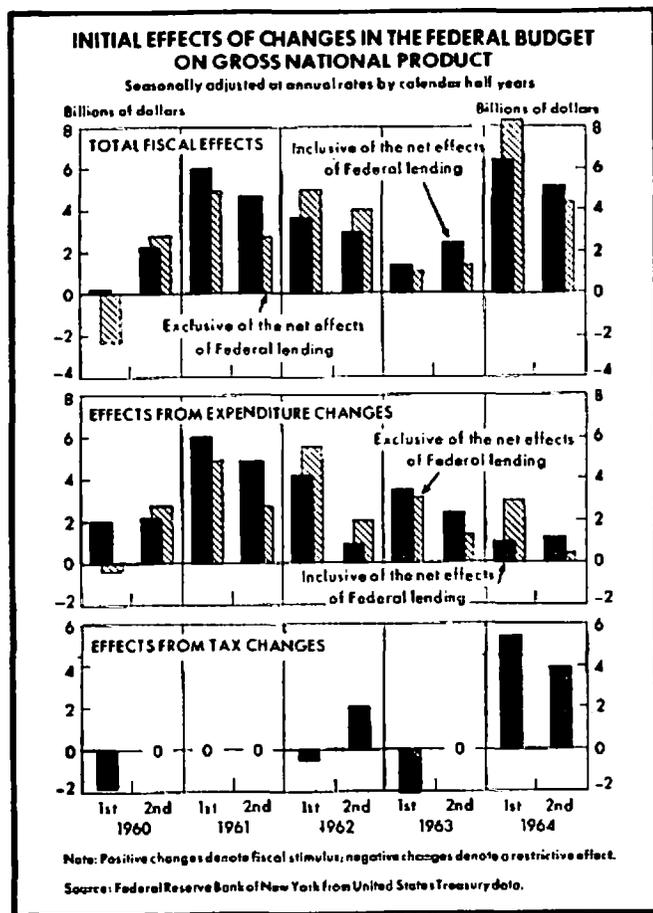
RESULTS

The present technique yields the figures of the chart and of Table I for the effects of changes in the Federal

Table I
INITIAL EFFECTS OF CHANGES IN THE FEDERAL BUDGET ON GROSS NATIONAL PRODUCT
Seasonally adjusted at annual rates; in billions of dollars

Calendar years by half years	Fiscal effects (excluding net Federal lending)			Fiscal effects (including net Federal lending)		
	From expenditure changes	From tax changes	Total fiscal effects	From expenditure changes	From tax changes	Total fiscal effects
1960: 1.....	-0.4	-1.9	-2.3	2.0	-1.9	0.1
2.....	2.7	—	2.7	2.2	—	2.2
1961: 1.....	4.8	—	4.8	6.0	—	6.0
2.....	2.7	—	2.7	4.6	—	4.6
1962: 1.....	5.5	-0.5	5.0	4.1	-0.5	3.6
2.....	2.0	2.0	4.0	0.9	2.0	2.9
1963: 1.....	3.1	-2.1	1.0	3.4	-2.1	1.3
2.....	1.3	—	1.3	2.4	—	2.4
1964: 1.....	3.0	5.4	8.4	1.0	5.4	6.4
2.....	0.4	3.9	4.3	1.2	3.9	5.1

Note: Absence of a sign denotes fiscal stimulus; a negative sign denotes a restrictive effect. Increases in expenditures or tax cuts are positive, decreases in expenditures or tax rises negative. The initial effect from expenditures is the period-to-period change in a series derived in Table II. The initial effect from taxes is the change in after-tax income due to tax revisions calculated in Tables III, IV and V (Tables II-V are in the Appendix).
Source: Federal Reserve Bank of New York from United States Treasury data.



budget in the calendar years 1960-64. At the beginning of the period for which calculations were made, i.e., in early 1960, budgetary changes were moving in the direction of restrictiveness as a result of an increase in social security taxes without any expenditures stimulus. The calculations suggest, however, that since that time changes in the Federal budget have been stimulative in each half-year period, regardless of whether the calculation includes or excludes the Government's loan operations.

Nevertheless, there have been significant fluctuations in the degree of stimulus occasioned by budgetary changes during the period under review. Generally, the effects of budgetary changes became gradually less stimulative between early 1961 and early 1963 but considerably more stimulative thereafter. This pattern is primarily the result of declining amounts of stimulus from changes in expenditures after 1961, followed by the significantly expansionary tax cut in 1964. Because that tax cut fell into early 1964, this period emerges as the most stimulative within the five years for which calculations were made.

It is interesting to note that the inclusion of net Federal lending activities in expenditures tends to smooth out some of the fluctuations in stimulus produced by changes in out-right expenditures. Moreover, the broader measure was to some degree stimulative in each of the periods since 1960

—most particularly in early 1961, when business activity reached the trough of a recession. The measure excluding loans shows sharper variations from period to period and suggests that expenditures changes were most expansionary not in early 1961 but in early 1962.

As was noted earlier, there is no reason to expect the numerical value of changes in the realized deficit from period to period to be the same as the numerical value of the present measure for comparable periods. Indeed, the differences have in fact been rather marked over the past few years. For example, the half-yearly changes in the cash deficit (at annual rates) have ranged from plus \$1.7 billion to minus \$1.9 billion in the 1962-64 period. The measure developed here, in contrast, has been positive throughout this period, ranging for the half years (at annual rates) from a low of \$1.3 billion to a high of \$6.4 billion (including net Federal lending), and from a low of \$1.0 billion to a high of \$8.4 billion (excluding net Federal lending).

TECHNICAL APPENDIX

The conceptual content of the measure of fiscal impact developed here requires information as exact as may be obtainable on the timing of the economic effect of Government expenditures and taxation: just when do outlays become an income flow to the private sector of the economy, and when do taxes become a withdrawal of income from the private economy? Unfortunately, many of the official series on important components of the budget are not entirely satisfactory in this respect. Therefore, a compromise series had to be developed, based on information available in different sets of published data.

EXPENDITURES. *What data to use?* With respect to inclusiveness, the expenditures figures listed in either the cash budget or the national income accounts budget are about equally satisfactory. Both cover virtually all Government payments to the private sector, though the national income accounts data do not include Government loans and though there is considerable "netting" of receipts and expenditures in both budgets.⁵ Administrative budget statistics, on the other hand, are not particularly useful for the analysis presented here, since they do not include the operations

of the social insurance funds or of the Government's other trust fund accounts.

As already suggested, the construction of a series in which expenditures are dated at the time of their impact on incomes presents a difficult problem. Cash budget data are not quite satisfactory for three reasons. First, the bulk of spending for the farm price support program has an income effect at a time other than the time of listing as a cash expenditure. These outlays are recorded in the cash budget when farmers default on their crop loans and forfeit their crops to the Commodity Credit Corporation.⁶ Yet, the income effect of these loans probably occurs several months earlier when the farmers initially borrow the funds.

Second, "payment" in cash budget terminology means that the check issued by the Treasury has actually been cleared through the banking system, whereas the income effect probably occurs when the person or firm receiving the check cashes or deposits it. Although the time lag between check issuance and check clearance is relatively short, the magnitude of the fluctuations in outstanding checks in the clearing accounts can be substantial, particularly around the end of a fiscal year.

Third, no data are published which permit, on a seasonally adjusted basis, a separation of expenditures under the Government's lending programs from other expenditures. The necessity for such a separation stems from the difficulties surrounding the measurement of the fiscal impact from changes in Government loans. Unlike the recipients of outright expenditures, the recipients of loans incur a financial liability to the Government. Moreover, some types of lending programs—such as those of the Federal National Mortgage Association—are so operated as to influence primarily credit conditions rather than expenditures in the private sector; and some loans made to foreign borrowers may have a smaller direct impact on the American economy than other types of loans or outright expenditures. Nevertheless, the bulk of Federal lending consists of loans which would not otherwise be available and generates additional spending by the recipients (or, in periods of net repayments to the Government, subtracts from spending that would otherwise take place). The analysis developed here skirts the issue by the calculation of two separate measures of fiscal effects—one excluding loans, the other including loans.

⁵ Expenditures for the Post Office are a case in point. These are included in both budgets as net of receipts of income from the sales of stamps and of other postal services.

⁶ It should be understood that this "default" is actually one major way in which the farm price support program is implemented. It is a type of default that, in its implications, does not correspond to defaults on private bank loans.

Table II
DERIVATION OF FISCAL EFFECTS FROM CHANGES IN FEDERAL EXPENDITURES
 Seasonally adjusted at annual rates; in billions of dollars

Calendar years by half years	National income accounts expenditures	Excess of interest accruals over payments	Excess of deliveries over payments	Modified cash expenditures (1)-(2)-(3)	Fiscal effects of modified cash expenditures*	Net Federal lending	Modified cash expenditures including loans (4)+(6)	Fiscal effects of modified cash expenditures including loans*
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1959: 2.....	92.4	0.8	-0.8	92.4	—	0.7	93.1	—
1960: 1.....	91.7	0.3	-0.6	92.0	-0.4	3.1	95.1	2.0
2.....	94.7	0.1	-0.1	94.7	2.7	2.6	97.3	2.2
1961: 1.....	100.8	0.3	1.0	99.5	4.8	3.8	103.3	6.0
2.....	104.3	0.5	1.6	102.2	2.7	5.7	107.9	4.6
1962: 1.....	109.5	0.7	1.1	107.7	5.5	4.3	112.0	4.1
2.....	111.4	0.9	0.8	109.7	2.0	3.2	112.9	0.9
1963: 1.....	114.6	0.9	0.9	112.8	3.1	3.5	116.3	3.4
2.....	115.8	0.9	0.8	114.1	1.3	4.6	118.7	2.4
1964: 1.....	118.7	0.8	0.8	117.1	3.0	2.6	119.7	1.0
2.....	119.7	0.8†	1.4†	117.5	0.4	3.4†	120.9	1.2

* Figures shown are period-to-period changes in preceding column.

† Estimated by the Federal Reserve Bank of New York.

Source: The data through 1963 are from the July 1964 issue of the *Survey of Current Business* with seasonal adjustments of columns 2, 3, and 6 by the Federal Reserve Bank of New York. The adjustments for the first half of 1964 were derived as the difference between the totals for fiscal 1964 listed in the *Budget Document* for fiscal 1966 (and other sources) and the totals for the second half of 1963. National income accounts expenditures for 1964 are available in the February issue of the *Survey of Current Business*.

The national income accounts budget also has its shortcomings as a source of expenditures data in terms of the present concept, most particularly because of the dating of expenditures. To be sure, price support payments to farmers are recorded as of the time the loan is made rather than when it goes into default, and checks are recorded when issued rather than when cleared. On the other hand, a number of expenditures items are listed in the national income accounts budget either as of the time of delivery of the goods to the Government (which may post-date the cash income effect), or when payments accrue to the private sector (which may precede the cash income effect).

The national income accounts data do, however, provide a "clean" seasonally adjusted expenditures series (excluding the Government's lending operations). As a practical matter, therefore, it is simpler to start with the national income accounts data rather than with the cash budget data. What follows, therefore, is a summary of the steps taken in adjusting the published expenditures data in the national income accounts budget to the "modified cash" basis needed for the present analysis.

Derivation of modified cash expenditures. In column 1 of Table II, expenditures in the national income accounts budget are listed by half years at seasonally ad-

justed annual rates.⁷ Many of the adjustments of these data that might be made to arrive at the measure needed for the present analysis are so small or so stable from period to period that they may be safely ignored. The two major adjustments that cannot be ignored are shown in columns 2 and 3 of the table.⁸

The first of these adjustments, shown in column 2, concerns the dating of interest payments. The national income accounts budget lists interest on the Federal debt as an expenditure as interest accrues. The effect on private income, however, occurs when interest is actually paid out and is so listed in the cash budget. In order to

⁷ Historical data for expenditures in the national income accounts budget are available by quarters and the adjustments needed are available by half years in the various July issues of the *Survey of Current Business*. Annual data, including the Administration's projections for the coming fiscal year, are published in the *Budget Document*, the *Economic Report of the President*, and the February issue of the *Survey of Current Business*.

⁸ Among the adjustments that have been ignored are expenditures for the District of Columbia (these are recorded as state and local expenditures in the national income accounts budget), and such adjustments for netting and consolidation as: contributions to Federal employee retirement funds by the Government and by Federal employees, contributions to the veterans' life insurance funds by the Federal Government, and an adjustment for the receipt of interest and for the proceeds of Government sales.

put interest payments in the national income accounts on a cash budget basis, the excess of interest accruals over interest payments, shown in column 2, should be removed from total expenditures. A similar problem occurs with respect to the payment for goods purchased by the Government. The national income accounts budget contains these payments when goods are actually delivered to the Government, but the impact is more likely to occur when cash payments for the goods are made, whether or not they have been delivered at that point. The adjustment which places expenditures on a payments basis is listed in column 3.

The two adjustments just described, and the total for loans shown in column 6 of Table II, are part of the regular public record, but only in amounts unadjusted for seasonal variation. The seasonally adjusted data shown in the table were developed at this Bank.⁹

Subtraction of the adjustments in columns 2 and 3 from the data in column 1 yields the "modified cash" version of expenditures listed in column 4 of Table II. Half-yearly changes in these modified cash expenditures are shown in column 5 as the fiscal effects from the expenditures side of the budget excluding the Government's lending operations. The addition to column 4 of Government loans, shown in column 6, gives a measure of modified cash expenditures including loans. These are shown in column 7, and half-yearly changes in this total, or the fiscal effects including loans, are shown in column 8.

TAXES. *What accounting basis?* The choice of an accounting basis by which to measure taxes presents an even thornier problem than in the case of expenditures. The main problem relates to corporate taxes since the use of different possible bases typically results in substantial variations in the figures.

The cash budget counts tax revenues when they are received by the Government; the national income accounts budget lists some types of taxes when they accrue. In the case of corporate taxes, this difference in timing can lead to widely disparate revenues totals in the two budgets for the same period because of the considerable lag between the time when corporations accrue taxes and the

time when these are paid.¹⁰ As an example, during early 1964 the effects of the Revenue Act of 1964 could be considered either restrictive or stimulative as regards corporate taxes, depending upon the basis used for measurement. On a liabilities basis the law provided for a corporate tax cut during the first half of 1964 of \$1.4 billion, but on a cash payments basis the law resulted in a temporary increase in tax payments of \$0.6 billion for the period, due to a speedup in the payments schedule (both figures given at seasonally adjusted annual rates). Similarly, the Budget Bureau has estimated that the difference between corporate tax accruals and corporate tax payments for fiscal 1966 will amount to \$2.9 billion.

These differences have, of course, substantive implications for a measure of the effect of budgetary changes on the economy as of the time when that impact is initially felt. More particularly, accuracy on the tax side requires some knowledge of whether the relevant impact upon corporations occurs as they incur the tax liabilities or as they actually make the tax payments. There is little empirical evidence on this issue. Therefore, the analysis presented here is based on a compromise. The estimates shown are a simple arithmetic average of corporate tax changes on an accrual basis and on a payments basis. No such averaging procedure appears to be necessary in the case of personal income tax changes. There is fairly general agreement that individuals react to their tax payments rather than their tax liabilities.

The remainder of this Appendix summarizes the estimate of the initial effects of individual and corporate after-tax incomes stemming from recent tax law changes. In each case, the effect is measured in terms of the change in taxes at the level of income prevailing in the previous period rather than as the simple period-to-period change in tax receipts.

Changes in individual tax rates. Social security taxes and personal income taxes have undergone major changes since 1960. Social security rates were increased three times during the 1960-64 period. The Social Security Administration has estimated the amounts of these increases at annual rates of \$2.1 billion in 1960, \$0.5 billion in 1962, and \$2.3 billion in 1963. Each of these

⁹ The formula $(A + 2B + C) \div 4$, in which A represents the previous period, B the current period, and C the succeeding period, has been used to obtain a "seasonally adjusted" figure for period B. The half-yearly totals are converted to annual rates by multiplying by 2.

¹⁰ Until 1964, large corporations were not required to make any actual tax payments on income earned during a given calendar year until September of that year. Indeed, the largest portion of their tax bill was not paid until the following March and June. (The somewhat different schedule for fiscal-year corporations does not materially affect this point.) In the national income accounts budget, however, taxes for any period are listed as the liability is accrued.

rate changes became effective on January 1 of the year indicated. Thus, the impact of the changes is listed in Table III for the first half of these three years. Although each tax rate change remained permanently in effect, there was no additional curtailment of incomes subsequent to the initial introduction of the increase, and therefore no tax change is listed in Table III for the succeeding half-year period or for later periods.

The Revenue Act of 1964, of course, provided for a substantial cut in personal income tax rates. To implement the cut, the basic withholding rate was reduced from 18 per cent to 14 per cent, effective in early March of 1964. At the level of personal income prevailing in calendar 1963, and given the amount of income taxes actually withheld at that income level, this reduction in the withholding rate would have provided individuals with an additional \$8.9 billion (annual rate) in after-tax income. Because the effective date of the withholding rate cut occurred in March 1964, or roughly two months after the first half of the year had begun, the amount of the tax cut for that half year is listed in Table III at an annual rate of only \$5.6 billion. In the second half of the year, however, the lower withholding rate covered the entire period. Hence the table lists an additional stimulus for the second half, which reflects the difference between the application of the lower rates to six months as against only about four months.

The net effects of the changes in social security and personal income taxes are shown in the last column of

Table III. As previously explained, these figures should be adjusted to allow for the fact that some of this after-tax income released was saved rather than spent and thus did not have a direct impact upon aggregate output. Therefore, these figures were multiplied by 90 per cent before including them in the final estimate of the total fiscal effect from taxes, shown later on in Table V. (The reversal of signs in Table V reflects the fact that a tax cut is stimulative, while a tax increase is restrictive.)

Corporate tax rate changes. Since 1960, there have been several tax changes affecting corporations—the investment tax credit, effective in 1962; the liberalization of depreciation allowances, also effective in 1962; and the Revenue Act of 1964, which provided for a two-stage tax cut and the acceleration of corporate tax payments.

The dollar value of the tax reduction generated by the investment tax credit of 1962 has been estimated at an annual rate of \$1.0 billion, while the liberalization of depreciation allowances brought about a tax reduction of \$1.2 billion (both figures based on 1962 income levels).¹¹ These estimates of the change in tax liabilities are shown in the first two columns of Table IV. Because both these tax features became effective in the second half of 1962, the timing of the reduction in cash payments largely coincided with the reduction in tax liabilities (or accruals). These two reduction measures, of course, remain in effect, but once again the logic of the "initial" impact measure requires that these tax changes be shown as affecting only the second half of 1962, which is done in Table IV.

Corporate income taxes were also reduced by the Revenue Act of 1964. Calculation of the effects of this reduction is somewhat more complicated than in the case of the earlier tax measures. First, the effective date of the cut in liabilities preceded that in tax payments. Second, the Act also provided for some acceleration of tax payments. On the basis of 1963 profit levels, the Treasury has calculated that the value of the over-all reduction in corporate tax liabilities will amount to about \$2.5 billion when fully effective in 1965. A little more than half this total, or about \$1.4 billion, was estimated as applicable to calendar 1964, effective as of the first half of the year. This number is shown in the third column of Table IV, which is on a liabilities basis. Tax payments, on the other hand, did not begin to reflect the effects of the rate

Table III
CHANGES IN INDIVIDUAL TAXES
Seasonally adjusted at annual rates; in billions of dollars

Calendar years by half years	Social security	Revenue Act of 1964	Total
1960: 1.....	+2.1	—	+2.1
2.....	—	—	—
1961: 1.....	—	—	—
2.....	—	—	—
1962: 1.....	+0.5	—	+0.5
2.....	—	—	—
1963: 1.....	+2.3	—	+2.3
2.....	—	—	—
1964: 1.....	—	-5.6	-5.6
2.....	—	-3.3	-3.3

Note: A minus sign denotes a reduction in taxes, a positive sign an increase in taxes.

Source: Estimates released by the United States Treasury Department and the Social Security Administration, or based upon the Treasury's estimates.

¹¹ All figures in this section are based on official United States Treasury estimates.

reduction until the second half of 1964. Thus, column 6 of Table IV, which shows the effects of the reduction in rates on a payments basis, lists the \$1.4 billion figure for the second half of 1964.

The Revenue Act of 1964 also provided that corporations make two "advance" income tax payments—in April and in June—on income earned during the same calendar year. These two payments were in addition to the traditional September and December advance payments. Between 1964 and 1970, the size of each of these new payments is scheduled to increase from 1 per cent to 25 per cent of the estimated tax liability for the given current year. In the long run, this provision affects only the timing of payments rather than the amount and will result in a closer correspondence of actual tax payments with accrued tax liabilities. But during the transition years, payments in any given half-year period are affected significantly. More specifically, corporate tax payments will tend to be relatively higher in the first half of each calendar year when corporations will make both the nor-

Table V
DERIVATION OF FISCAL EFFECTS FROM CHANGES IN FEDERAL TAXES
Seasonally adjusted at annual rates; in billions of dollars

Calendar years by half years	Individual tax changes	Corporate tax changes	Fiscal effects of tax changes
	(1)	(2)	(3)
1960: 1.....	-1.9	—	-1.9
2.....	—	—	—
1961: 1.....	—	—	—
2.....	—	—	—
1962: 1.....	-0.5	—	-0.5
2.....	—	+2.0	+2.0
1963: 1.....	-2.1	—	-2.1
2.....	—	—	—
1964: 1.....	+5.0	+0.4	+5.4
2.....	+3.0	+0.9	+3.9

Sources: Tables III and IV, with actual amounts of tax changes listed in those tables multiplied by 90 per cent to reflect the assumed initial effects of the changes in taxes on spending (and with signs reversed to reflect the inverse relationship of tax changes from the budgetary point of view as against their fiscal effects).

Table IV
CHANGES IN CORPORATE TAXES
Seasonally adjusted at annual rates; in billions of dollars

Calendar years by half years	Changes in liabilities			Changes in cash payments				Average of liabilities and payments bases
	Investment tax credit of 1962	Liberalized depreciation of 1962	Revenue Act of 1964	Investment tax credit of 1962	Liberalized depreciation of 1962	Revenue Act of 1964		
						Rates	Speedup	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	
1960: 1.....	—	—	—	—	—	—	—	—
2.....	—	—	—	—	—	—	—	—
1961: 1.....	—	—	—	—	—	—	—	—
2.....	—	—	—	—	—	—	—	—
1962: 1.....	—	—	—	—	—	—	—	—
2.....	-1.0	-1.2	—	-1.0	-1.2	—	—	-2.2
1963: 1.....	—	—	—	—	—	—	—	—
2.....	—	—	—	—	—	—	—	—
1964: 1.....	—	—	-1.4	—	—	—	+0.6	-0.4
2.....	—	—	—	—	—	-1.4	-0.6	-1.0

Note: A minus sign denotes a reduction in taxes, a positive sign an increase in tax payments.
Source: Estimates released by the United States Treasury Department or based upon the Treasury's estimates.

mal final payments on profits earned in the preceding year and two additional payments on estimated profits for the current year. Thus, in column 7 of Table IV, an increase in tax payments of \$0.6 billion is shown as occurring in the first half of 1964—the result of the speedup—followed by a reduction in payments of \$0.6 billion in the second half (to reflect the fact that higher payments in the first half do not also remain in force for the second half of the year).

The last column of Table IV shows the "compromise" effect of the changes in corporate taxes over the 1960-64 period (calculated simply by taking the arithmetic average of the effects on a liabilities basis and on a seasonally adjusted cash basis). Following the same procedure that was applied to the effects of changes in individual tax rates, these compromise figures are multiplied by 90 per cent, the signs are reversed, and the results shown in column 2 of Table V. The last column in Table V, which is reproduced in Table I and is also plotted in the chart, shows the total initial effects of the changes that have occurred in the individual and corporate tax laws over the 1960-64 period.