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Are All Summary Indicators of the Stance of Fiscal Policy Misleading?

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Abstract

Two recent criticisms of summary fiscal indicators are appraised: first, that they and the conventionally-measured public sector balances from which they are derived are not sufficiently broadly defined; second, that they are meaningless because they do not reflect changes in the distribution of wealth among generations. The paper concludes that the defects of summary fiscal indicators have been exaggerated. It is not feasible to include all changes in public sector net worth in the deficit, and the existence of liquidity constraints and aversion to indebtedness imply that conventionally-measured public sector deficits are not irrelevant.

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Summary

Summary indicators of the fiscal stance regularly calculated by both the Fund and the OECD are used in appraisals of demand-management policy. These indicators and the flow-of-funds deficits on which they are based have been the object of two distinct lines of criticism in recent years. The first argues that the standard flow-of-funds deficit is too narrowly defined; one critic, in particular, has argued that the deficit should include changes in the public sector's net worth from whatever source, including relative price effects on the value of public assets. The other line of criticism argues that the deficit, however adjusted or defined, is devoid of economic significance, because it does not properly measure the impact of fiscal policy on savings and capital formation. This impact results from the changes fiscal policy brings about in the distribution of wealth between generations.

The paper summarizes and appraises these two lines of criticism. As an illustrative example of the implications of broadening the deficit to include relative price effects on the public sector's net worth, the paper discusses the case for and against including, in the measure of the deficit, changes in the value of crude oil reserves in the public domain. For some purposes it could be useful to include such changes, but it is also clear that their inclusion could be misleading, so that the best course would be to present an estimate of the impact on public-sector net worth of the change in the value of the reserves as a piece of complementary information. At least in the case of crude oil and other mineral reserves, it may be possible to make a reasonable estimate. For many public-sector assets, such estimates would be arbitrary at best. Even if estimates can be made, it is unclear why they should be included in the flow-of-funds measure of the deficit from which summary indicators would be derived.

The second line of criticism depends crucially on the assumption that a change in current income of households has no effect on consumption if it does not alter household wealth. Ricardian equivalence is assumed to apply, so that a tax cut now will be financed by a tax increase later. Consumption is affected only if different generations are unequally affected by fiscal policy: it would be increased if the wealth of older generations is increased and that of younger generations reduced, because the marginal propensity to consume of the first group will be less than the second. The weakness of this line of criticism is its dependence on extreme assumptions about human behavior and the absence of liquidity constraints. Nonetheless, summary fiscal indicators can be misleading and need to be used with caution.

I. Introduction

That the unadjusted balance of the public sector's financial operations is an unreliable indicator of the stance of fiscal policy has long been recognized by economists. 1/ Its unreliability stems from its endogeneity with respect to the level of economic activity--that is, the sensitivity of most revenue and some expenditure components to the business cycle. Various indicators of the stance of fiscal policy have tried to purge the balance of its endogenous component; the Fund's cyclically adjusted deficit is one of a number of measures used. An additional and much discussed problem with the unadjusted deficit is its failure to take account of the effect of inflation in eroding the real value of the government's net financial liabilities. In a reflection of both these concerns, the Organisation for Economic Cooperation and Development (OECD) regularly publishes an indicator that is adjusted for the influence of both inflation and the business cycle. 2/

Even inflation and cyclically adjusted indicators have been criticized for their lack of comprehensiveness. Boskin (1988), in his work on the U.S. federal government deficit, has argued that the items now excluded from it can have significant macroeconomic impacts, and that certain other items have not been properly measured. 3/ Buiter (1985), however, has argued that a proper measure of the deficit would take into account changes in the public sector's net worth from whatever source, and has proposed that national and international authorities prepare comprehensive balance sheets of the public sector's assets and liabilities. This would entail inclusion in the measure of the changes to net worth brought about by, among other causes, an increase in the value of the government's property or mineral rights (e.g., arising from a discovery of natural resource reserves). Furthermore, Buiter has argued that adjusting deficits for the impact of inflation or of the business cycle is not enough to make the conventional figure a useful guide to an assessment of the stance of fiscal policy. 4/

Kotlikoff (1984, 1986) has gone one step further, arguing that even the comprehensive public sector accounting proposed by Buiter would not yield a useful indicator. This second and more fundamental critique takes the view that the basic accounting labels--such as tax or nontax revenue, transfer payments, and interest payments--are economically meaningless.

1/ "Public sector" is used throughout this paper to refer to government in general--that is, both narrow and broader definitions of government.

2/ See Heller, Haas, and Mansur (1986); and OECD (various years).

3/ Boskin (1988) presents a summary of his and other economists' work on this issue.

4/ See "General Discussion" in Buiter (1985), pp. 68-70.

Kotlikoff proposes what he calls the economic deficit, but this is not a notion that can be summarized by a single number or index. The economic deficit is increased when resources are shifted from younger to older generations. This shift increases aggregate consumption and reduces the rate of capital formation, because the marginal propensity to consume of the elderly, who have fewer years left over which to consume their wealth, is higher than the marginal propensity to consume of the young. Kotlikoff argues that many fiscal policies in the United States (e.g., the less than fully funded social security system, or the capital incentives introduced in 1981) would not affect the conventional measures of the deficit, but would have massive effects on the economic magnitudes that really matter--namely, the aggregate savings rate and the rate of capital formation.

The purpose of this paper is twofold: first, to give a brief exposition of these critiques of the more conventional indicators of the deficit, and second, to assess the usefulness of the alternatives that Buiter and Kotlikoff propose. However strong the critiques, the conventional indicators will probably continue being constructed, but it is still useful to consider exactly how and under what conditions they may be unreliable. If they are often or generally misleading, then the question of whether new indicators can be derived from the alternatives proposed by Buiter and Kotlikoff takes on great importance.

The paper begins with a discussion of how the stance of fiscal policy can be defined and estimated, and then proceeds first to present and then to appraise the critiques of Buiter and Boskin. Conclusions are presented in the final section. An appendix compares the Fund cyclically adjusted balance with an alternative based on a simple Keynesian model that allows for differences in the weights placed on expenditure and revenue.

II. Definition and Measurement of the Stance of Fiscal Policy

1. Definitional and conceptual aspects

A statement to the effect that the stance of fiscal policy is conservative is usually supposed to mean that the current set of policies is more restrictive in its effect on the economy than some other set of policies. Thus, fiscal policy stance can only be understood by reference to some norm or base case; to say that a policy implying a budget surplus of X percent when the economy is at a level of activity of Z is restrictive requires at least an implicit comparison with some other set of policies--for example, those implying a balanced budget.

However, before the concept of the stance of policy can be made operational, a number of further questions raised by this definition must be answered. First, how is one set of fiscal policies characterized, and distinguished from another? Second, what is meant by

an expansionary effect and its opposite? A difficulty that besets attempts to answer either question is the uncertainty regarding the period of time over which the two sets of fiscal policy and their impacts on the economy are to be compared.

These questions can be approached analytically with the aid of a simple, general model. 1/ Suppose for the sake of argument that an economy can be represented by the following set of equations:

$$Y = B \cdot X + C \cdot Y_{-1} + D \cdot FP + E \cdot OP, \tag{1}$$

where Y, X, Y_{-1}, FP, and OP represent, respectively, the endogenous variables, exogenous variables, lagged endogenous variables, fiscal policy variables, and other policy variables.

The endogenous variables would include the price level, the level of real output, the level of employment, and so on. The fiscal policy variables would include the level of government expenditure in each period--at least, where that level is not partly determined by variations in other economic magnitudes, such as unemployment insurance payments--as well as variables capturing the effect of current tax and benefits legislation. In equation (1) it is assumed that these can be represented as exogenous policy variables in a linear system. However, they would in practice be built into the structure of the model, and would therefore not be so easily isolated. Nonetheless, it may be easier to conceive of them as being separate policy variables whose values can be altered in the same way as other exogenous variables.

In order to characterize one set of fiscal policies and to compare it with another set, it is necessary to determine two sets of values for FP. However, even determining just one set, the one that characterizes fiscal policy in the base case, poses certain problems. Thus, it is not always obvious what constitutes current policy. For example, under current policy, should government expenditure on goods and services be assumed to be constant in real terms? Or should it grow, and if so, at what rate? If such expenditure is thought to be determined in real terms, what mechanism of indexation should be used to convert it to nominal terms? Whatever assumption is made must be somewhat arbitrary, and it remains to be seen whether the conclusions that are drawn from a comparison of fiscal policies would in practice be affected by the assumption that is made. 2/

Once fiscal policy in the base case and the alternative case has been characterized, it is also necessary to specify what is meant by an expansionary impact. This is not as straightforward as it might seem.

1/ This exposition is similar to that in Blinder and Goldfeld (1976).
2/ These and other conceptual difficulties in the assessment of the stance of fiscal policy are discussed in Heller, Haas, and Mansur (1986).

Thus, a change in fiscal policy might initially increase real gross domestic product (GDP) above its base case levels but subsequently decrease it. An overall effect could be calculated by measuring the present discounted value of the difference in GDP in each period entailed by the new fiscal policy set. Alternatively, the impact on real GDP in the first year only might be taken into account.

Suppose that we are interested in the impact of fiscal policy on real GDP in the first period. Solving equation (1) for the reduced form of the equation, with real GDP in period 1 (y_{11}) as dependent variable, yields the following:

$$y_{11} = F \cdot Y_{-1} + G \cdot X + H \cdot FP + J \cdot OP . \qquad (2)$$

The indicator of the stance of fiscal policy (IFPS) would then be

$$IFPS = H \cdot (FP_2 - FP_1) , \qquad (3)$$

where FP_2 and FP_1 are the new set and the base case set of fiscal policy variables, respectively. In other words, the fiscal policy stance is the product of a series of multipliers and changes in fiscal policy instruments. For example, if the changed instruments are transfer payments to pensioners and defense expenditures, the coefficients in H represent the reduced-form multipliers for these two expenditure categories.

None of the various summary indicators of the fiscal stance, with the exception of the weighted indicator devised by Blinder and Solow (1974), takes this form, so that from a strictly theoretical standpoint neither the IMF nor the OECD summary indicator appears to be adequate. 1/ It does not follow, however, that these indicators may not be good proxies for the indicators that would be derived from more complex models.

The difference in form between the IMF measure and a model-based measure can be illustrated with the elementary Keynesian model shown below:

$$C + E + G = Y \qquad (4)$$

$$C = B_0 + B_1 \cdot Y(1 - t) , \qquad (5)$$

where C stands for aggregate consumption, E for autonomous expenditure, G for government expenditure, Y for aggregate income, and t for a

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1/ Buiter (1985) makes this point. Blinder and Goldfeld (1976) discuss the same problem with respect to the full-employment surplus indicator. The weighted standardized budget surplus is described in Blinder and Solow (1974). Chand (1977) offers an extensive discussion of summary indicators.

proportional tax on income. When B_0, the constant term in the consumption function (equation (5)), is set equal to zero, which effectively subsumes its influence in autonomous expenditure, the reduced form for Y is

$$Y = (E + G)/[1 - B_1(1 - t)]. \tag{6}$$

Differentiating equation (6) with respect to G and t yields the following expressions:

$$dY/dG = 1/[1 - B_1(1 - t)] \tag{7}$$

$$dY/dt = (-B_1 \cdot Y)/[1 - B_1(1 - t)] . \tag{8}$$

Because for small dt, $dT = dt \cdot Y + dY \cdot t$, equation (8) can be re-expressed as

$$dY = -B_1/(1 - B_1) . dT . \tag{9}$$

Re-expressing equation (7) in the same way gives

$$dY = 1/[1 - B_1(1 - t)] \cdot dG \tag{10}$$

These are the basic multiplier expressions from which the balanced budget multiplier can be derived; thus in the simple case where t = 0 and dG equals dT, dY may be expressed as

$$dY = dG . \tag{11}$$

If the multiplier of equation (10) is called M, the total derivative of Y with respect to changes in G and T (equal to $t \cdot dY$ because t = 0) may be expressed as

$$dY = M \cdot dG - B_1 \cdot M \cdot dT . \tag{12}$$

If dG were equal to dT, then the indicator of the stance would be expressed as

$$IFPS = M \cdot (1 - B_1) \cdot dG = dG . \tag{13}$$

With the indicator of fiscal policy used by the Fund for the World Economic Outlook (WEO) report--the stance of fiscal policy will be either unchanged, more expansionary/less contractionary, or less expansionary/ more contractionary--the thrust of fiscal policy will be neutral, expansionary, or contractionary--according to whether the change in government expenditure minus the change in tax revenue from one period to the next is equal, exceeds, or falls short of the change

in what is termed the cyclically neutral balance. $\underline{1}/$ This condition may be stated:

$$FIM = [G_2 - G_1) - (T_2 - T_1)] - [G_{n2} - G_{n1}) - (T_{n2} - T_{n1})] \quad (14)$$

where FIM stands for fiscal impulse measure, G and T are actual expenditures and tax revenues, G_n and T_n are cyclically neutral expenditures and revenues, and the subscripts 1 and 2 denote time periods.

Cyclically neutral expenditure is defined as $g_p \cdot Y_p$, where g_p represents the ratio of actual government expenditure to income in a base period in which actual and potential income were deemed to be equal, and Y_p represents potential income. Cyclically neutral tax revenues are in turn defined as $t \cdot Y$, where t represents the ratio of revenues to income in the base period. The fiscal impulse measure can be broken down into its expenditure and revenue components, so that it is possible to speak of the sources of the fiscal impulse. The contribution of the expenditure side (CG) is given by

$$CG = [(G_2 - G_1) - (G_{n2} - G_{n1})] \quad (15)$$

and that for the revenue side (CR) by

$$CR = [(T_2 - T_1) - (T_{n2} - T_{n1})] . \quad (16)$$

To revert to the notation of the simple Keynesian model, if period 2 is the reference period, then dG is positive when G_2 exceeds its previous value by the growth in cyclically neutral expenditures, and similarly for dT. However, if dG = dT, then the impulse is zero--the stance of fiscal policy is unchanged. Thus, in the WEO presentation the multiplier effect of revenue and expenditure is the same. It follows that measures of the stance of fiscal policy derived from a Keynesian-type model and the IMF fiscal impulse measure could differ not only in magnitude but in sign. The Appendix explores the question of whether this could be a serious problem in practice. $\underline{2}/$

2. Complications posed by an inflationary adjustment

Many studies have examined the need to adjust the conventional indicators of the stance of fiscal policy in an inflationary

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$\underline{1}/$ The Fund's measure and other measures are reviewed in Heller, Haas, and Mansur (1986), especially pp. 10-11. The presentation here differs somewhat from theirs.

$\underline{2}/$ Schinasi (1986) compares the IMF and OECD measures of fiscal impulse.

environment. 1/ Although it is not necessary to detail the relevant arguments, it is useful to summarize the relevant points made in these studies.

When the government's debt is entirely short term, and when interest rates vary directly with the current rate of inflation, an increase in inflation will cause an increase in the government's interest payments, and in the government deficit and the ratio of the deficit to GDP. 2/ If the government's debt is held by the private sector, this increase in the deficit has its counterpart in an increase in the private sector's surplus, which reflects the increase in the private sector's nominal interest earnings.

Is the increase in government expenditure expansionary? The answer to this question turns on the manner in which the private sector perceives its extra interest income. Suppose the rate of inflation had risen from zero to 5 percent, and that the rate of interest had risen from 2 percent to 7 percent, or by exactly the increase in the rate of inflation.

These extra 5 percentage points are necessary just to compensate the private sector for the erosive effect of inflation on the real value of its holdings of government debt. In other words, if the private sector were to increase its consumption in response to the increase in its nominal interest earnings, the real value of its wealth would be reduced. Thus, the conventional (non-inflation-adjusted) measure of private sector income will overstate its real Haig-Simons income—that is, the amount it can consume without depleting its real wealth. In an analogous fashion, the conventional measure of the government's deficit overstates the real increase in the stock of its net liabilities.

If the private sector saves the increase in its interest income, the conventional indicators give a misleading indication of the stance of fiscal policy. The increase in expenditure is not expansionary, because it is automatically saved. The inflation adjustment corrects the measure by subtracting from the expenditure impulse an estimate of the inflation-induced decline in the real value of the government's net liabilities; the adjustment can be calculated in a number of ways.

1/ A comprehensive discussion of adjustment for inflation can be found in Tanzi, Blejer, and Tejeiro (1987). Many of the problems posed by inflation adjustment are also discussed in Mackenzie (1987).

2/ If the balance exclusive of interest payments (B_{ei}) is a constant proportion of GDP, and if interest payments (IP) are determined by applying the short-term rate of interest (r) to the stock of debt (D), then the balance of the government's operations inclusive of interest payments as a ratio to GDP is given by (B_{ei} + r · D)/GDP, or B_{ei}/GDP + r · D/GDP. By assumption, B_{ei}/GDP is a constant, and r · D/GDP will vary directly with the rate of inflation.

What happens to the government's deficit when all its debt is long-term and does not need to be continuously refinanced? In this case, an unexpected increase in the rate of inflation will affect only the interest payments on the newly issued increments and occasional refinancings of the public debt. Unless the sum of these is large in relation to the outstanding stock of debt, the impact on the deficit that an increase in inflation has through the interest payments channel will be small.

Nonetheless, the real value of the government's debt and the private sector's wealth is lowered by an increase in the rate of inflation. To the extent that the private sector responds by saving more to compensate for the erosion of its real wealth, it can be argued that a conventional indicator of the fiscal stance overstates the *expansionary impact* of fiscal policy, and should be adjusted for the impact of inflation on the real value of public debt as in the previous case.

That the private sector would respond to an unexpected increase in the rate of inflation by increasing its saving by an amount equal to the inflation-induced decline in the real value of its holdings of public debt is by no means the only reasonable response it could make, and it is equally not certain that it would maintain unchanged the real value of its holdings of government debt. It might, for example, increase its holdings of real estate or other real assets. This is especially likely if the increase in inflation is the result of a deliberate policy by the government to reduce the real value of its outstanding obligations and to benefit from the inflation tax. Inflation adjustment can give an expansionary/inflationary bias to the conduct of fiscal policy, and the use and interpretation of inflation-adjusted measures of the fiscal stance require some care. 1/

III. Comprehensive Public Sector Accounting and Indicators of the Fiscal Stance

In two recent papers, Buiter (1983 and 1985) has criticized the conventional measure of the deficit and the fiscal stance indicators constructed by the Fund and the OECD, among others. Instead, Buiter (1983) *advocates the use of comprehensive accounting for the public sector, which measures all changes in net worth of the public sector from whatever source.* 2/ He faults the conventional measure of the

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1/ See Tanzi, Blejer, and Tejeiro (1987) for a discussion of the impact of inflation on the demand for public debt and how this affects the interpretation of the inflation adjustment.

2/ As noted in the introduction, Buiter is not the only economist to have argued for a more comprehensive definition of public sector net worth for the purposes of measuring the deficit. However, his proposed definition is particularly broad.

deficit, even when that measure is expressed in real terms, because it excludes changes to the net worth of the public sector stemming from changes in the real values of the outstanding stocks of public assets. Changes in net worth that are excluded are those resulting from, among others, the impact of inflation on the real value of assets and liabilities whose value is fixed in nominal terms; the depreciation of real assets; exchange rate variations when assets and liabilities are denominated in foreign currencies; changes in relative prices (e.g., changes in the value of public mineral rights consequent upon a change in the relative price of minerals); and changes in the present value of future tax payments under current tax laws and of future expenditure commitments under current expenditure programs.

In the 1983 paper Buiter does not dismiss out of hand cyclically- and inflation-adjusted deficits, noting that "inflation-accounting in the public sector is long overdue" (p. 345). He also argues that a traditional contracyclical fiscal policy can be interpreted as a device to reduce the gap between permanent and current income, a policy that increases economic welfare when consumers are liquidity-constrained.

In the later paper, however, Buiter (1985) asserts the need for long-term budgeting that takes into account the future path of revenues and the financibility of the deficit, but he rejects conventional measures of the deficit, whether adjusted or not, on the grounds that none of the simple indicators of the fiscal stance can be derived from a model rich enough in features to be taken seriously.

Buiter recommends that national and international authorities begin constructing comprehensive balance sheets, presumably with the aid of a macroeconomic model, so as to encompass these kinds of changes to net worth in the measure of the deficit. He acknowledges this would be a prodigious task, but argues that it would be worth the effort, because conventional measures of the public sector balance may seriously misrepresent the options open to a government.

This proposal raises two key questions. First, is it practicable? Second, what purpose would it serve? In particular, could the measure of the change in net worth derived from this estimate replace the conventional indicator, or even the inflation-adjusted and cyclically- adjusted version of the conventional indicator?

Unlike the conventional accounting measure, the comprehensive measure would require that assumptions be made about such macroeconomic phenomena as the rates of growth of real and nominal GDP, the evolution of the general price level and of interest rates, as well as the price of assets owned by the government. Changes in net worth from some of the sources noted above would be more easily estimated than others. For just two examples of difficult valuation problems, consider changes in the value of a missile system or in the value of national parks or natural reserves. More tractable would be the valuation of mineral royalty rights, but much uncertainty would attach to the estimate.

Changes in net worth resulting from increases in the present value of future expenditures under an entitlement program could be estimated with the aid of a macroeconomic model, but inevitably the assumptions that would need to be made regarding the model's exogenous variables and policy instruments would be somewhat arbitrary, as noted in the previous section. In particular, the future course of expenditures under an entitlement program may be determined by current legislation given the macroeconomic environment, but the same is not true of other expenditures.

Nonetheless, at least some of these changes in net worth could be used to augment the conventional measure. The question remains whether the more comprehensive measure would be a better indicator of the stance of fiscal policy. To illustrate some of the implications of a broader measure, consider the case of a hypothetical economy that enjoys a discovery of a substantial reserve of petroleum in the public domain. The discovery will increase the public sector's net worth, because it increases the value of the government's mineral rights. However, this increase will not be reflected in either the flow of funds deficit or in any of the conventional indicators of the fiscal stance, including those correcting for the effects of inflation and the business cycle. Does the exclusion of changes in the value of such assets from the public sector balance or from the indicators make them misleading?

If the increase is included, then the public sector's balance is greater, other things being equal, and the stance of fiscal policy, as calculated by the IMF and OECD indicators, is less expansionary/more restrictive than it otherwise would be. Note that this conclusion does not require that any of the petroleum be extracted. But has there been a contractionary shift in the stance of fiscal policy?

The discovery increases both the public sector's net worth and the permanent income of the economy. Some time can pass before any of the mineral is actually extracted, and unless the economy's residents treat the discovery as effectively adding to their personal wealth and determine their consumption expenditures on the basis of that wealth, the resource discovery will not lead to an increase in consumption. Nonetheless, the permanent income or wealth of the economy is now higher, and an increase in aggregate consumption is both feasible and possibly desirable. 1/ An increase in public expenditure or a discretionary reduction in taxes will allow such an increase to take place, so that the application of a simple rule like, "avoid policies resulting in large positive stimuli to the economy as measured by a conventional indicator of the stance of fiscal policy," could be quite inappropriate. In such circumstances, a large stimulus may be good policy.

1/ It is feasible to the extent that the economy can borrow externally; it is desirable assuming that current consumption prior to the discovery was not excessive.

Nonetheless, an expansionary fiscal policy will have the same effects on the economy after the discovery as before--namely, some combination of effects such as an increase in domestic absorption and interest rates, and a decline in the external current account balance; and the failure to implement an expansionary fiscal policy will not reduce domestic absorption or lead to a contraction of output. Moreover, the inclusion of the change to net worth resulting from the resource discovery in the measure of the deficit and in an indicator of the fiscal stance will mean that this indicator can no longer be used as a guide to the impact of fiscal policy on current macroeconomic activity.

Suppose that instead of a resource discovery, the price of petroleum increases, so that the value of a publicly owned petroleum reserve is increased. Should this increase also be included in the measure of the public sector balance and in indicators of the fiscal stance? In this case, unlike the first case, it cannot be said that the permanent income of the economy is necessarily increased. This would depend on whether the economy is a net importer of petroleum and on the scale of its net imports in relation to its reserves. To take a specific example, if the increase in the present value of the annual net oil import bill were to exceed the increase in the value of the petroleum reserve, permanent income would undoubtedly fall. 1/ Thus, although the public sector balance sheet looks better, the private sector's balance sheet would look worse. In this case, it would be the more broadly defined indicator that would give the wrong signal; and a policy based on the rule, "avoid large increases in public sector net worth," could give the wrong results.

Some analysts have proposed augmenting the conventional deficit by a measure of the change in the present value of the unfunded liabilities of the social security system. 2/ At present, both national accounting-based and cash-based measures of the government's financial operations treat the operations of the social security system on a cash basis, in the sense that only current operations, not changes in its accrued liabilities, are reflected in either measure. Should these changes be reflected in an indicator of fiscal policy stance?

The answer to this question turns partly on semantics, and partly on assumptions about the way the accrued liabilities would affect economic behavior. If the change in the accrued liabilities results from a policy introduced in the current year, it is arguable that any change in economic behavior they bring about should be attributed to fiscal policy. Thus, for example, if one of the fiscal policy variables

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1/ The argument needs to be qualified to take account of the possibilities of substituting other goods for petroleum. The argument supposes that these are not very great.

2/ For example, Bossons and Dungan (1983) make such a suggestion in their study of public sector deficits in Canada.

in the model in Section I represents policies affecting the social security system, and a change in these policies affects current macroeconomic activity, then they ought to be included. If, however, the increase in accrued liabilities results from policies taken in the past, it would not be included in the measure of fiscal policy stance determined by the model, unless the assumption was made that increases in the unfunded liabilities in relation to the trend rate of growth of GDP constitute discretionary fiscal policy by definition, analogous to the definition of cyclically neutral expenditure in the IMF fiscal impulse measure.

The crucial issue is whether the increase in unfunded liabilities would affect economic behavior. Many economists believe that consumption in the United States has been increased by the failure to adopt a fully funded social security system, although the estimates of the size of the increase vary greatly. 1/ A case can certainly be made for broadening the conventional measure of the deficit to include this change in net worth of the public sector, but it would be difficult to determine the size of the weight to be attached to it in an indicator of the stance of fiscal policy.

The values of mineral or resource rights and of unfunded entitlement program liabilities are two examples of changes in public sector net worth that are not reflected in conventional measures. Others include contingent claims on government resulting from public insurance programs and contingent liabilities entailed by the possibility of default by beneficiaries of public lending programs, and the decline in net worth entailed by the depreciation of infrastructure and other publicly owned real assets. It is important for many reasons to understand the implications of these phenomena for public policy, but except in the case where their change can be shown to contribute to the impact of government operations on aggregate demand or financial markets, it is not clear why they belong in an indicator of the stance of fiscal policy. 2/

IV. Concept of the Economic Deficit

Kotlikoff (1986) has argued that accounting labels like "taxes," "expenditure," "transfers," and "borrowing" are ill-defined and essentially arbitrary terms with no general basis in economic theory,

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1/ Boskin (1988) discusses this issue.
2/ Boskin (1988, p. 90) states: "It is unclear whether those who have attempted to generate greater information on government assets and liabilities really believe that a net worth variable is the appropriate one (whether adjusted for inflation or cyclical conditions) to enter as a measure of the government's economic impact...my opinion is that such measures are useful primarily to provide measures of national wealth and to place concern about government liabilities in better perspective."

and that neutral terms like "receipt" and "payment" would be more appropriate. The conventional nomenclature is arbitrary because receipts and payments may be labeled in a number of different ways. Nonetheless, the choice of nomenclature affects the calculated value of the deficit.

Kotlikoff gives an example of a transaction between the government and an individual that comprises a receipt by the government in one year of $1,000 and a payment to the individual of $1,500 ten years later. The receipt in year zero could be labeled "taxes," and the payment in the tenth year "transfers." Alternatively, the receipt could be labeled "borrowing," and the payment, "repayment of principal plus interest." With the first set of labels the deficit in year zero is $1,000 less than it would be without the transaction, and $1,500 more in the tenth year. With the second set, the deficit in year zero is unaffected, and in the tenth year is increased by the part of the $1,500 that represents interest payments. However, the change in nomenclature obviously has no effect on the behavior of the economy, because the individual's consumption possibilities are unchanged. 1/

Many, perhaps most, economists would argue that there is a crucial difference between taxation and government borrowing; taxes must be paid, but generally no one is obliged to lend to the government. Many, if not most, economists might also note that with the possible exception of social security contributions, the receipt by government of revenue is not paired with an obligation to make a payment at some future date. A final observation could be that even if the classification of various items such as "revenue," "expenditure," and "financing" is not clear-cut, classifications are not usually changed from one year to the next.

Taking this last point first, the example can be altered to illustrate how with one set of labels a change in fiscal policy can leave the deficit unchanged, whereas with another set of labels the change in policy does alter the deficit. By way of an example that is less abstract than the one above, consider a policy that entails an expansion in the coverage or an increase in the generosity of benefits of a pay-as-you-go (PAYG) old-age state pension program.

Under a PAYG system, an increase in expenditure is financed by an increase in current contributions of plan participants. Standard national accounting practice and that of the Fund's Manual of Government Finance Statistics (GFS) is to treat contributions as government revenue and pension payments as expenditure (transfer payments). Kotlikoff argues that the sequence of payments and receipts entailed by social security is akin to that entailed by the purchase of a government bond. Specifically, there is some relation between the contributions made by or on behalf of individuals and the benefits they receive in

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1/ Kotlikoff (1986).

their later years. The return to social security contributions is not predetermined, and there is some risk in an "investment" in social security; for example, contributors to the U.S. system are not assured of any given level of benefits or ratio of benefits to average earnings, and even in the absence of changes to the social security legislation they do not learn of their entitlements until a few years before they are due to retire. 1/ Nonetheless, investments in government bonds also entail a risk; their capital value is uncertain and so is the real value of the income stream associated with them.

The expansion of a PAYG system has no impact on the deficit when the conventional accounting definitions are employed, because the expenditures and revenues of the government will increase by equal amounts. However, if contributions are treated as loans to the government, and expenditures on pensions as repayment of loans and interest, then the deficit will be affected.

This can be illustrated with a simple example that assumes that individuals work in one period, or year, and retire in the second. The conventional accounting shows no change to the public sector deficit from an expansion of a PAYG pension system that takes place in the first year of the two years (Table 1). Benefits are assumed to be $1,000 in the first year and $1,500 in the second, and are exactly matched by contributions in both years.

However, with Kotlikoff's labels, there is a deficit in both years. The expansion of the system implies that persons who are already retired in the first year receive pensions without previously having made contributions, and these must be labeled transfer payments. As a result, the public sector's balance is reduced by $1,000 in the first year, and by $500 in the second.

Turning to the first and second points, Kotlikoff's treatment of social security contributions as loans assumes that such contributions do earn an implicit return, albeit an uncertain one, and also--which may be more controversial--that the obligation to participate in a public pension plan and to make social security contributions does not reduce the wealth of the participant any more than the purchase of a bond would. In effect, the contributions are treated as if they created an obligation on the part of the government to repay the contributors. In the GFS terminology, the contributions are a repayable receipt of the government. 2/

1/ A related and interesting aspect of the U.S. system is the quite frequent instance of errors in payments. According to a General Accounting Office (GAO) study, the rate of error in 1986 was 12.7 percent; some 4.2 million persons were either overpaid or underpaid (GAO (1987)).
2/ International Monetary Fund (1986), p. 97.

Table 1. Public Sector Balance Changes Under
Alternative Accounting Frameworks

| | Conventional Accounting | |
	Year I	Year II
Expenditure	+1,000	+1,500
Revenue	+1,000	+1,500
Deficit	--	--
	Alternative Accounting	
Expenditure	+1,000	+500
Transfers	+1,000	--
Interest	--	+500
Revenue	--	--
Deficit (-)	-1,000	-500
Financing	+1,000	+500
Borrowing	+1,000	+1,500
Repayment (-)	--	-1,000

The obligatory nature of the transaction is of little economic significance to Kotlikoff. Although many economists would assume that an increase in social security contributions, whether through an increase in rates or an extension in the coverage of the system, would reduce disposable income and hence reduce consumption expenditure, Kotlikoff takes as axiomatic the view that consumption in any period is determined by lifetime income, that is, by wealth. If social security contributions effectively give title to a future income stream of equal present value, they do not reduce wealth. Consequently, they do not reduce the consumption of contributors in any period.

Although Kotlikoff seems to make a case for a revision, rather than an overthrow of accounting nomenclature, even the alternative accounting framework of the table cannot be used as the basis for a new classification system; it merely illustrates the arbitrary nature of conventional labels. Nonetheless, the example just discussed is an instance of a fiscal policy that creates what Kotlikoff would call an economic deficit, because it increases consumption expenditures and reduces the resources available for capital formation. Specifically, when the social security system's expenditures are increased, the elderly, retired generation benefits from an increase in its wealth; it receives pensions without having to make contributions. Kotlikoff assumes this generation spends all or most of the increase in its lifetime. Meanwhile, the younger, working generation, which "pays" for the increased expenditure, does not reduce its consumption propor-tionately, because its wealth is unaffected. As a result, aggregate consumption expenditure increases. In a fully employed economy, the resources available for investment are reduced.

The conventional measure of the deficit through flow of funds accounting has been criticized for not taking into account unfunded liabilities of the social security system, as noted in Section III. Kotlikoff's critique is different and more basic, because the creation of an economic deficit does not depend on the need for future increases in rates of contribution to preserve the financial balance of a PAYG system. Even if rates can remain indefinitely at their initial levels, an increase in consumption and a shift in resources to the elderly take place. Moreover, the assumption that the propensity to consume of the elderly is higher than that of the young is unnecessary. All that is necessary is that perceived wealth increase, and this does happen, given Kotlikoff's assumption that the contributions of the younger generation are akin to the purchase of securities.

Economic deficits can be created by a reform that replaces one kind of tax with another, even if the yield of the new tax is no different from the old. For example, a shift from a tax on income to a tax on consumption would shift resources from the elderly, who are net

dissavers--they are in the phase of the life cycle where their consumption expenditure exceeds their income--to younger generations, who are accumulating wealth and spending less than they earn. 1/

Changes in the economic deficit in the sense intended by Kotlikoff can even be created by governmental measures that would not be regarded as having anything to do with fiscal policy. An instance would be the introduction of an environmental measure that restricted the use of industrial capital, if this measure reduced the value of the existing stock of capital.

How would an across-the-board reduction in personal income taxes be treated in this framework? The answer is not obvious, because it would depend, among other things, on how the reduction in taxes was distributed across generations, the degree of progressivity of the tax system, and the distribution of income. Above all, it would depend on how the reduction in revenue was to be financed. If the reduction is financed by the issue of bonds now, combined with a subsequent increase in taxes later, the impact of the tax reduction depends as well on the distribution of the burden of the future tax increase. When the same people as benefit from the tax reduction pay the subsequent increase in taxes, the reduction in taxes has no effect on the economy. The increase in current income resulting from the reductions leads to an increase in financial saving, and in the private sector's holdings of public debt of equal amounts. There are no liquidity constraints to be relieved by the increase in current income, and permanent income is unchanged. Hence, there is no increase in consumption.

However, if older persons benefit from the tax reduction, subsequent generations pay for it, and consumption increases because the marginal propensity to consume of the first group, as we have seen, will be higher than that of the second. If the tax reduction is to be financed by the creation of money, the impact of the reduction on consumption will depend on the distribution across generations of holdings of money and other financial assets whose values are fixed in nominal terms. Nonetheless, the use of inflationary financing would have many ramifications beyond its impact on consumption.

The discussion to this point suggests these conclusions. First, no simple model could determine with any precision the magnitude of the impacts of different measures on consumption and capital accumulation. The most it might do is to indicate whether the impact is positive or negative. Second, the analysis is irrelevant for an understanding of

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1/ Taking a simple example in which a proportionate tax on income is replaced by a proportionate tax on consumption, the tax rate on consumption has to be greater than the rate of the tax on income to generate the same revenue, because aggregate income exceeds consumption. The elderly must then pay more tax under the new regime, because their consumption exceeds their income.

the short-run impacts of fiscal policy in an economy that is experiencing deficient aggregate demand or is significantly cash-constrained; the available evidence on cash constraints in the United States and other economies would have to be assessed before the usefulness of Kotlikoff's approach could be evaluated.
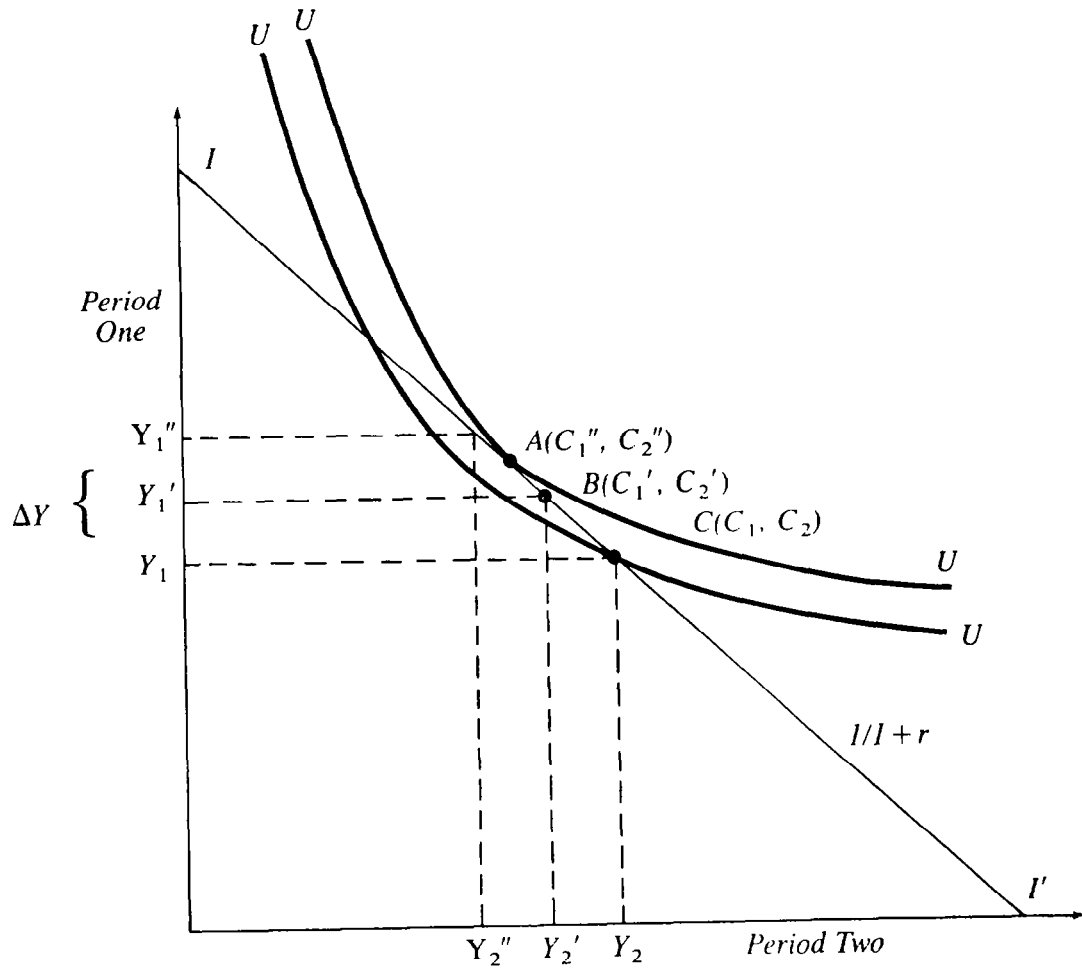
The presence of liquidity constraints would change the analysis. Thus, suppose that the taxes paid by a given generation are shifted forward in time from midlife to early adulthood, when current income is typically lower. The life cycle model would imply that consumption would be high relative to income in the earlier period if households can borrow on the strength of their future income. However, if they cannot borrow, their consumption in this period would be less than it would if they could borrow.

In these circumstances, a tax reduction now that is financed by an increase in taxes in the later period is akin to a loan, and it is quite possible that consumption will increase. It is important to understand, however, that this increase depends on current income being low relative to future income, and that liquidity-constrained households behaving as the life cycle predicts would not invariably increase their consumption by the full amount of the tax reduction.

These arguments can be clarified with a simple two-period model of household behavior (Figure 1). If it is possible to borrow on the strength of income in period 2 to finance consumption in excess of income in period 1 at the same rate of interest earned on saved income from period 1, then the consumption possibilities in period 1 are given by the line $\ell\ell'$. With income in period 1 of Y_1 less than the discounted value of income of Y_2 in period 2, the household spends more than it earns in period 1 and its consumption in the two periods is given by point A.

If it is no longer possible to borrow on the strength of period 2 income, the household's consumption possibilities are restricted to the line $Y_1 C \ell'$. With the indifference curve shown in the diagram, the household will consume all its period 1 income on consumption in period 1 and be at point C. Now suppose that in period 1 there occurs a lump-sum reduction in taxes of an amount indicated by Y_1' minus Y_1 in Figure 1, offset by an increase equal to Y_2 minus Y_2' in period 2. The household's consumption possibilities are now given by the line $Y_1 B \ell'$, and it will increase its period 1 consumption by the full amount of the increase in its after-tax income in period 1, moving from C to B. Thus, its marginal propensity to consume out of its extra income is 100 percent. However, had the household's consumption in period 1 not been constrained by its income, the tax reduction would have had no impact whatsoever, because the household's wealth would have been unaffected, and its consumption possibilities would not have changed.

Figure 1
Consumption and Income Under
Liquidity Constraints

The existence of a cash constraint by itself does not inevitably imply this result. Thus, if income in period 1 were Y_1' instead of Y_1, and income in period 2 were Y_2' instead of Y_2, the tax reduction would have increased consumption in period 1 by less than the increase in income from Y_1' to Y_1'', so that the marginal propensity to consume would have been much less than 100 percent and consumption in the two periods would be given again by point A. Nonetheless, when consumers are liquidity constrained, even tax reductions that are expected to be reversed can lead to an increase in present consumption.

Recent studies suggest that a significant proportion of consumers in the United States are liquidity constrained, essentially because consumption is more sensitive to fluctuations in current income than would be predicted by the life cycle model in the absence of cash constraints. [1] For example, Hall and Mishkin (1982) find that some 20 percent of consumption is by liquidity-constrained households. Flavin (1981, 1985) also finds that liquidity constraints are a important determinant of consumption. In view of the relative ease with which consumer credit is obtained in the United States, and the relative absence of institutional rigidities impinging upon credit markets, it is arguable that liquidity constraints would likely be more important in most other economies, and in particular in less industrialized economies. Rossi (1988), who reports on tests of consumption behavior in a sample of developing countries, concludes that liquidity constraints are a significant influence. It is also arguable that there is a psychological dimension to the liquidity constraint--some people do not like to borrow, even if "objective" criteria imply they can afford to do so.

It needs to be emphasized, however, that these studies do not point unambiguously to the conclusion that Kotlikoff's approach is invalid. If 80 per cent of consumption is by households that do not experience liquidity constraints, and these households smooth consumption over time in the manner predicted by the life cycle hypothesis, tax reductions could be mostly offset by increases in household savings, and vice versa, unless they affect different generations. Moreover, the existence of liquidity constraints taking the form of credit rationing or differential borrowing and lending rates does not automatically rule out the possibility that consumption will not be affected by a tax cut; for example, it is possible that lenders may reduce the maximum value of loans in response to a tax cut, on the grounds that future tax increases will increase the likelihood of default if credit limits are not reduced by an amount proportionate to the increase in current disposable income entailed by the tax cut (Hayashi (1985)).

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[1] Some recent studies are reviewed by Evans (1987) and Hubbard and Judd (1986).

Another related and problematic assumption underlying the Kotlikoff approach pertains to the interpretation by households of the government's financing constraint. Would most households really be so sophisticated as to assume that a tax reduction now would ultimately require a tax increase at some future date to finance it? If they do not, then a tax reduction increases household wealth, and using the reduction to finance consumer durable expenditure--not consumption expenditure in the life cycle model--would not be irrational behavior.

V. Appraisal and Conclusions

It is worth emphasizing that any measure of the stance of fiscal policy must be specific to one particular model of the economy. Thus, in "ultrarational" models where the unexpected announcement of a future increase in government expenditure raises long-term interest rates and depresses investment and aggregate output in the present, even the sign of a conventional fiscal impulse measure would be wrong. 1/

Kotlikoff's critique of fiscal indicators based on standard accounting labels is itself dependent on a neoclassical model of the economy, and his own view of the way the economic world works requires him to substitute another set of labels for the conventional labels. A tax reduction now that is financed by an increase later is not a matter of indifference to cash-constrained households contending with imperfect credit markets. In a cash-constrained world, the component of wealth contributed by current income is important, and buying on the installment plan raises the purchase price. In such a world, summary indicators of the budget stance derived from flow of funds accounts can serve a purpose.

Nonetheless, there are some fiscal policy changes that no simple model could capture and that would not be reflected in a change in the budget balance. An example would be a substantial change in the tax regime--for example, a substantial reduction in average and marginal rates of income taxation coupled with the introduction of a value-added tax. The summary indicator approach is probably most reliable for modifications to existing tax regimes and expenditure programs, rather than wholesale tax reforms and substantial changes in the composition of expenditure.

Two other criticisms of the summary indicator approach also deserve comment. It is often argued that the indicator approach is misguided because of its failure to consider the sources of financing of the public sector's operations. Thus, in the simple monetarist model, fiscal policy cannot be expansionary unless it is validated by an increase in bank financing. Does it follow that it is useless to determine whether the fiscal stance has changed?

1/ This is discussed by Buiter (1985), pp. 48-49.

This question is partly one of semantics, but there is a point to the exercise regardless of the way an increased deficit is financed. That is because even in a simple monetarist world with the money supply held constant, an expansionary fiscal policy has some impact on the economy. A tax reduction leading to an increase in the deficit is associated with higher interest rates and capital market pressures. An increase in the deficit entailed by a fortuitous decline in inventory investment is not associated with these effects. 1/

It is quite true that an expansionary fiscal policy does not result in an expansion of output in all models. It is nonetheless interesting that even in ultrarationalist models it is invariably associated with capital market pressures and interest rate increases. Whatever the model, the autonomous component of the public sector balance has an effect that differs from its endogenous component. For this reason, the separation of fluctuations in the public sector balances into their autonomous and cyclical components is a valuable exercise, even though making distinctions that are inevitably arbitrary.

A second criticism is that the various summary indicators give misleading results. Thus, a given measure shows that policy became more restrictive at a time when inflation accelerated, and the inference is made that the measure countenances a more expansionary policy, which most people would regard as clearly inappropriate. However, it is incorrect to make this type of interpretation. The estimation of the fiscal stance and its evolution implies nothing about which stance is appropriate. It does not follow that because the fiscal stance has been tightened, it should not be tightened further.

1/ To use the IS-LM framework, in the first case the IS curve shifts to the right against a fixed and vertical LM curve, and interest rates must rise to crowd out interest-sensitive expenditure. In the second case, the IS curve shifts to the left, and the comparative static result is that interest rates decline.

The WEO Fiscal Impulse Measure

Would the WEO indicator be misleading even in a simple Keynesian world? The answer depends on the model's parameters--namely, the tax rate and the marginal propensity to consume; but it would also depend on the way fiscal policy was implemented.

Fiscal policy can be characterized by using the categories of the fiscal impulse decomposition in Section II, and one of four states must prevail. When the thrust on both sides of the budget is either expansionary or contractionary, the two measures would at least give the same qualitative result; problems only arise when changes are in the opposite direction (see Table 2). The following practical questions arise: first, how often would changes in opposite directions occur; and how often would the offsetting movements be large enough to change the sign of the impulse?

Table 2. Comparison of Fiscal Policy Thrust of Impulse Measure and Simple Keynesian Model

| | | Expenditure Impulse | |
		Expansionary	Contractionary
Revenue Impulse	Expansionary	Same qualitative result	Ambiguous
	Contractionary	Ambiguous	Same qualitative result

An examination of the revenue and expenditure impulses calculated using the fiscal impulse method at the central government level for the Group of Seven countries in the period from 1978 to 1987 shows that revenue and expenditure impulses have been of opposite sign more often than not; specifically, there were 41 instances of opposite signs out of a possible total of 67 (see Table 3).

Nonetheless, in some 30 of these instances of opposite sign, the absolute value of the expenditure impulse equaled or exceeded that of the revenue impulse. For example, in the case of France, where the impulses were of opposite sign in 7 years out of 10, the absolute value of the expenditure impulse equaled or exceeded the absolute value of the revenue impulse in 6 of the 7 years. In particular, in 1981 the expenditure impulse was a positive 1.4 percent of GDP, and the revenue impulse a negative 0.2 percent. In these cases, the fiscal impulse measure and the measure derived from the simple Keynesian model would give the same qualitative result.

Table 3. Major Industrial Countries: Fiscal Impulse and its Components
at the Central Government Level

(In percent of GDP) 1/

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
United States										
Fiscal impulse	0.1	-0.8	0.4	--	0.4	1.7	0.7	0.4	-0.5	-1.3
Revenue impulse	-0.1	-0.6	-0.4	-0.8	1.1	1.2	-0.1	-0.4	-0.1	-0.6
Expenditure impulse	0.2	-0.2	0.8	0.8	-0.8	0.4	0.8	0.8	-0.4	-0.7
Canada										
Fiscal impulse	1.4	-0.4	-0.1	-1.1	1.4	0.7	1.7	0.5	-1.5	-0.5
Revenue impulse	1.0	0.1	-0.6	-1.9	0.6	0.5	0.1	-0.3	-0.7	--
Expenditure impulse	0.4	-0.5	0.6	0.8	0.8	0.2	1.6	0.8	-0.8	-0.5
United Kingdom										
Fiscal impulse	2.0	-0.9	-1.7	-1.6	-0.4	0.3	0.4	-0.3	0.2	-0.1
Revenue impulse	1.3	-0.8	-1.4	-1.8	-0.4	0.2	-0.2	-0.2	0.9	0.5
Expenditure impulse	0.7	-0.1	-0.3	0.3	--	0.2	0.6	-0.1	-0.7	-0.6
Japan										
Fiscal impulse	0.2	1.1	0.1	-0.5	-0.3	-0.5	-0.6	-0.6	-0.7	-0.3
Revenue impulse	-1.3	-0.5	-0.9	-0.9	-0.5	-0.5	-0.1	-0.4	-0.6	-1.0
Expenditure impulse	1.5	1.6	0.9	0.4	0.2	--	-0.5	-0.1	-0.1	0.8
France										
Fiscal impulse	0.8	0.1	-0.6	1.2	0.2	0.1	-0.1	-0.2	-0.5	-0.6
Revenue impulse	0.2	-0.6	-0.6	-0.2	-0.5	0.8	0.2	0.1	0.1	--
Expenditure impulse	0.5	0.6	--	1.4	0.7	-0.7	-0.2	-0.4	-0.6	-0.6
Germany, Federal Republic of										
Fiscal impulse	0.2	--	-0.2	--	-0.7	-0.2	0.3	-0.4	--	--
Revenue impulse	-0.1	-0.1	0.1	--	-0.3	0.2	0.2	-0.1	0.5	0.3
Expenditure impulse	0.4	0.1	-0.2	-0.1	-0.4	-0.4	0.1	-0.3	-0.5	-0.3
Italy										
Fiscal impulse	4.9	-2.9	-0.3	0.6	1.5	0.1	-0.7	0.8	-1.4	-0.4
Revenue impulse	0.5	0.3	-4.7	0.2	-3.1	-1.2	0.3	-0.1	-1.1	-0.2
Expenditure impulse	4.5	-3.1	4.4	0.5	4.5	1.3	-1.0	0.9	-0.3	-0.2

Source: Staff estimates.

1/ GNP for Canada, the United Kingdom, and the United States. For definition of central government operations, see International Monetary Fund (1988), pp. 75-76.

In the 11 remaining instances of opposite signs, the absolute value
of the revenue impulse exceeded the absolute value of the expenditure
impulse. Here there is a possibility of conflict between the fiscal
impulse measure and the simple Keynesian measure, because the
expenditure impulse gets a higher weight than the revenue impulse (see
equation (12)). Thus, in the United Kingdom in 1986, the revenue
impulse is positive 0.9 percent, which offsets the negative expenditure
impulse of 0.7 percent. If the weight attached to revenues were one
half that of expenditure, then the Keynesian measure would be
negative. Nonetheless, even in these cases of opposite sign, the
difference between the two measures would not typically be very great,
because in most of these cases the absolute value of the impulses as a
percent of GDP is not very large for either revenue or expenditure, and
the fiscal impulse as a percent of GDP is small. The sign of one
measure could differ from the other, but neither measure would be large,
and in view of the margin of uncertainty attaching to such calculations,
the difference would not really be significant.

Similar patterns are evident in the expenditure and revenue
impulses calculated at the general government level. Out of a possible
67 instances 38 are of opposite sign. However, in 18 of these the
absolute value of the expenditure impulse equals or exceeds that of the
revenue impulse, so that the fiscal impulse and the simple Keynesian
measure would give the same qualitative result (Table 4). Again, in
most of the remaining 20 instances of opposite sign, where the two
measures could give contradictory results, the absolute value of both
measures is relatively small, so that the difference between the two
measures would not in general be significant.

Nonetheless, there are some instances of opposite sign where the
absolute values of the two impulses are large. For example, in Italy in
1982, a positive expenditure impulse of 1.2 percent of GDP is offset by
a negative revenue impulse of 2.6 percent of GDP. With no difference in
weights, the overall impulse represents a withdrawal of stimulus of
1.4 percent of GDP; but if the revenue impulse has a weight of only one
half that of expenditure, no withdrawal of stimulus would be estimated.

Thus, the fiscal impulse measure does not often give seriously
misleading results in a simple Keynesian world, although it is important
that the impulse be disaggregated into its expenditure and revenue
components so that different weights can be applied to them if
necessary.

What of a slightly more complicated Keynesian model, where each of
the different categories of revenue and expenditure has a different
multiplier? Would the fiscal impulse measure give a different result
than the indicator derived from the reduced form of the model? With a
model with many expenditure and tax multipliers, the possibility
increases that the fiscal impulse measure and the indicator derived from
the model would give results that were substantially different. This is
particularly true if both the multipliers of revenue and expenditure

Table 4. Major Industrial Countries: Fiscal Impulse and its Components
at the General Government Level

(In percent of GDP) 1/

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
United States										
Fiscal impulse	--	-0.5	0.7	-0.5	0.6	0.6	0.6	0.7	0.2	-0.8
Revenue impulse	0.1	-0.2	-0.2	-0.7	0.4	0.5	0.1	-0.6	-0.1	-0.8
Expenditure impulse	-0.2	-0.3	0.9	0.2	0.2	0.1	0.5	1.3	0.2	-0.1
Canada										
Fiscal impulse	1.4	-0.2	0.5	-0.7	1.4	1.1	1.5	1.5	-1.0	-0.6
Revenue impulse	0.4	0.2	-0.8	-2.3	-0.6	0.5	0.2	-0.1	-0.9	-0.1
Expenditure impulse	1.0	-0.4	1.3	1.5	2.0	0.6	1.3	1.5	-0.1	-0.5
United Kingdom										
Fiscal impulse	1.9	-0.9	-2.0	-2.7	-0.7	1.3	0.6	-0.5	0.2	-0.2
Revenue impulse	1.4	-0.9	-1.8	-2.2	-0.5	0.7	0.1	0.1	0.9	0.5
Expenditure impulse	0.4	--	-0.2	-0.6	-0.2	0.6	0.5	-0.5	-0.6	-0.7
Japan										
Fiscal impulse	1.7	-0.5	-0.4	-0.8	-0.5	-0.2	-1.2	-0.9	-0.2	-0.7
Revenue impulse	0.2	-1.9	-1.3	-1.5	-0.3	-0.3	-0.6	-0.7	-0.1	-0.8
Expenditure impulse	1.5	1.4	0.9	0.8	-0.2	0.1	-0.6	-0.2	--	0.1
France										
Fiscal impulse	1.1	-0.9	-1.4	1.4	0.7	-0.2	-0.9	-0.2	--	-0.5
Revenue impulse	0.2	-4.7	-2.0	-0.8	-0.8	-0.7	-1.1	-0.1	0.5	-0.5
Expenditure impulse	0.9	3.9	0.6	2.2	1.6	0.6	0.3	-0.1	-0.5	--
Germany, Federal Republic of										
Fiscal impulse	0.4	0.8	-0.2	-0.5	-1.9	-0.4	0.6	-0.9	0.2	0.2
Revenue impulse	0.6	0.2	-0.3	-0.2	-0.6	0.5	--	-0.3	0.8	0.4
Expenditure impulse	-0.2	0.6	0.2	-0.3	-1.2	-0.9	0.6	-0.6	-0.6	-0.3
Italy										
Fiscal impulse	1.2	0.3	0.4	1.8	-1.4	-1.5	0.8	1.2	-0.9	-0.7
Revenue impulse	-1.1	0.4	-2.1	-1.1	-2.6	-2.3	1.0	-0.2	-0.9	-0.5
Expenditure impulse	2.4	-0.1	2.5	3.0	1.2	0.8	-0.2	1.4	--	-0.2

Source: Staff estimates.

1/ GNP for Canada, the United Kingdom, and the United States. For definition of general government operations, see International Monetary Fund (1988), pp. 75-76.

measures differ substantially from one another, and if the composition
of revenue and expenditure measures differs substantially from one year
to the next. For example, the weight that would be derived from the
model for transfer payments would be less than the weight derived for
expenditure on goods and services. Nonetheless, if the marginal
propensity to save of transfer recipients is low, the difference between
the weights will not have much practical importance.

Even if the difference between the weights for the various
expenditure and revenue categories is significant, the practical
importance of distinguishing between them depends on whether or not the
expenditure and revenue categories tend to vary together. If they do
not, then the fact that an expansionary shift in the stance of fiscal
policy might in one year be brought about by a reduction in income tax
and an increase in welfare payments, and in another by a reduction in
social security contribution rates and an increase in military
expenditure, would pose problems for the fiscal impulse measure.

Determining how much of a difference disaggregation would make to
the indicator of the fiscal stance would require a fully specified model
of the economy, from which the multipliers or weights to be attached to
the various categories of expenditure and revenue could be determined--
an exercise beyond the scope of this paper. Nonetheless, some insight
into the limitations of the aggregated approach on the expenditure side
can be gained by a simple experiment that applies a lower weight to
transfer payments than the weight applied to the other expenditure
categories. 1/

One indicator can be constructed by applying the lower weight
separately to the component of transfer payments deemed to represent the
discretionary component of fiscal policy, and the higher weight to the
sum of the discretionary components of the other expenditure
categories. This indicator can then be compared to an indicator
constructed by the application of a weighted average of the two weights
to the discretionary component of total expenditures. This latter
indicator makes no allowance for the possibility that the discretionary
component of transfer payments could move in the opposite direction from
the discretionary component of the other expenditure categories.

This exercise was carried out for the Group of Seven countries
using data from 1979-86. The discretionary change in each expenditure
category was determined by taking the difference between the growth of
actual expenditures--less unemployment insurance benefit payments--and
the growth of trended expenditures, with the trended value constrained
to equal the actual value in 1978. 2/ Nontransfer expenditures were
assigned a weight of 1, and transfers, a weight of 0.5.

1/ Musgrave (1964) introduced the concept of differential weights for
different components of expenditure and revenue.
2/ Trend expenditures were then assumed to grow at the same rate as
nominal potential GDP; that is, real potential GDP, plus the rate of
change of the GDP deflator. This is the WEO procedure.

The first and disaggregated indicator can be expressed as

$$IFPS_{1i} = 0.5 \cdot (TR_i - TR_{Ti}) + 1 \cdot (G_i - G_{Ti}) \ ,$$

where TR is the increase in transfer payments, G the increase in other expenditures, and the subscript T stands for trend. The second measure can be expressed as

$$IFPS_{2i} = [w \cdot 0.5 + (1 - w) \cdot 1] \cdot [(TR_i - TR_{Ti}) + (G_i - G_{Ti})] \ ,$$

where w is given by the average ratio of transfer payments to total expenditures for the 1978-86 period.

The ratio $IFPS_2/IFPS_1$ is in most years close to 1 for the Group of Seven countries in the 1979-86 period, but there are many instances when the ratio is significantly different. Expressed as a percentage of GDP, however, the differences between the measures in these years are less than or equal to 0.2 percent in 48 instances out of 54. However, in two cases—Japan in 1982 and France in 1979—the difference exceeds 1.0 percent (Table 5).

Table 5A. Major Industrial Countries: Normalized Weighted Expenditure Impulse
at the General Government Level

(In percent of GDP)

	1979	1980	1981	1982	1983	1984	1985	1986
Canada	-0.4	1.0	1.6	2.2	0.5	1.2	1.5	-0.2
United States	-0.4	0.7	0.2	0.1	--	0.7	1.4	0.2
Japan	1.4	0.9	0.7	-1.2	0.1	-0.6	-0.2	-0.3
France	5.2	0.8	2.2	1.6	0.6	0.2	-0.1	-0.6
Germany, Federal Republic of	0.7	0.4	-0.3	-1.3	-0.9	0.5	-0.5	-0.6
Italy	0.4	3.2	3.1	1.3	0.7	-0.2	1.6	--
United Kingdom	-0.2	0.1	-0.9	-0.3	0.7	0.3	-0.7	--

Source: Staff estimates.

Table 5B. Major Industrial Countries: Ratio of Unweighted to Weighted Measure
of Thrust of Expenditure Policy at the General Government Level

	1979	1980	1981	1982	1983	1984	1985	1986
Canada	0.88	1.31	0.93	0.89	1.21	1.08	0.99	0.63
United States	0.80	1.18	1.29	1.26	7.06	0.77	0.89	1.02
Japan	0.99	1.04	1.08	0.15	2.33	0.99	1.27	0.15
France	0.75	0.72	0.98	0.96	0.95	1.06	0.96	0.84
Germany, Federal Republic of	0.76	0.34	1.04	0.94	1.01	1.11	1.23	1.05
Italy	...	...	0.95	0.96	1.14	0.75	0.88	3.32
United Kingdom	0.19	-4.03	0.63	0.61	0.85	1.59	0.75	1.11

Source: Staff calculations. For details of calculations see text. Data on transfer payments
come from OECD, National Accounts, 1974-86, Volume II, Detailed Tables.

Table 5C. Major Industrial Countries: Difference Between Unweighted and
Normalized Weighted Expenditure at the General Government Level

(In percent of GDP)

	1979	1980	1981	1982	1983	1984	1985	1986
Canada	0.1	0.3	-0.1	-0.2	0.1	0.1	--	0.1
United States	0.1	0.1	--	--	0.1	-0.2	-0.2	--
Japan	--	--	0.1	1.0	0.1	--	--	0.2
France	-1.3	-0.2	--	-0.1	--	--	--	0.1
Germany, Federal Republic of	-0.2	-0.3	--	0.1	--	0.1	-0.1	--
Italy	...	...	-0.2	-0.1	0.1	0.1	-0.2	--
United Kingdom	0.2	-0.3	0.3	0.1	-0.1	0.2	0.2	--

Note: The values in Table 5A are constructed by dividing the expenditure impulses shown in
Table 4 by the values in Table 5B.

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