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THE CASE FOR AN INFLATION-ADJUSTED DEFICIT

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Research Paper

FEDERAL RESERVE BANK OF DALLAS

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Large budget deficits have been a major source of controversy in recent years. Federal budget deficits have cumulated to nearly $250 billion in the past eight years, and this year's will add another $50 billion or so. Justifications for most of these deficits have focused on general weakness in the economy, while critics have warned of accelerating inflation and crowding out. Yet the economic stimulus has been less than hoped and the effect on capital markets less than feared. One source of misunderstanding may be a failure to consider the effect of inflation on the significance of the size of the deficit.

Persistent inflation over the past decade has already forced a reexamination of many economic statistics. Discussion of current economic activity now centers on real GNP rather than nominal GNP as was common a decade ago. The leading indicators on the Commerce Department's index are now in real terms, also. The price-deflated data have generally proved more useful for evaluating and predicting the condition of the economy. The desirability of some less straightforward inflation adjustments to remove distortions in business balance sheets and income statements has also become widely accepted. The Commerce Department's national income and product accounts (NIPA) now use replacement costs rather than historical costs in the measurement of capital consumption, and the Securities and Exchange Commission now requires similar estimates at the firm level. Still other accounting adjustments would produce more useful measures of economic

activity in an inflationary period.[1] In particular, adjustment to the Federal budget surplus or deficit would make it a more useful summary measure of the impact of the Federal Government on the economy.

An adjusted Federal budget deficit which takes account of the effects of inflation on the real value of the Federal debt would provide a better indication of the Government's fiscal position. Under current budget procedures inflation can cause increases in measured deficits without increasing the impact of the Federal Government on capital markets. After an appropriate adjustment, which would correct this distortion, surpluses and deficits would be roughly equal over the past decade. The same inflation adjustment could also be applied to the full-employment budget, providing an improved measure of fiscal policy. The current full-employment budget measure overestimates the expansiveness of Government policy during periods of inflation relative to periods of price stability.

The Adjustment

The budget surplus or deficit is basically a measure of whether spending by the Government is less or more than its income. Since 1950 the Government has piled up deficits exceeding surpluses by $279 billion in the national income and product accounts. The net national debt (which does not include what the Government owes itself) has increased by an even greater $344 billion over the same period, primarily to finance those deficits. However, when the debt figures are adjusted for inflation, they show no significant change over the 27-year period.[2]

The cause of this paradox is a failure to examine real rather than nominal magnitudes. In real terms, inflation produces a capital gain

on its debt for the Government, as it does for all net debtors. Inflation diminishes the real liability of the Government because inflated dollars are easier to repay and the fixed interest payments are less burdensome. In nominal terms, however, there is no gain since the amount to be repaid equals the amount borrowed.[3]

The effect on private lenders is, of course, just the reverse. In order to protect themselves they will require the Government to pay higher interest rates on its debt, just offsetting the decrease in the real value of their bondholdings. The increased interest payments, or inflation premiums, can be considered equivalent to an early return of a portion of the principal.

The expectation of inflation does not change the real return demanded by investors; it merely changes the form and timing of the real return. Investors receive higher interest payments during the life of their loan, but the lump-sum repayment of principal at maturity has a smaller real value. A budget problem occurs because we count the inflation premiums paid by the Government as an expense in the budget but do not count, as income, the offsetting diminution in the real value of the debt.

Since expectations are imperfect, the inflation premiums will often either overcompensate or undercompensate investors. To the extent that inflation is underestimated, investors suffer a decline in the real value of their bondholdings greater than the inflation premiums they receive. Conversely, when inflation is overestimated, the premiums exceed the capital loss in real terms. The effect of the error in expectations is to produce a windfall gain or loss in addition to the fully anticipated gain that compensates for the inflation premiums. Although overestimates and

underestimates should balance out over time, errors in expectations can cause significant real income losses or gains in any given year.

An obvious solution, encompassing both anticipated inflation and the errors in anticipations, would be to add the Government's accrued real capital gain to the rest of its accrued income in the NIPA budget.[4] This could be done by multiplying the average Government debt outstanding in any year by the rate of price inflation for that year and adding the product to the existing measure of the Federal surplus (or subtracting it from the deficit.)[5] The magnitude of some of the adjustments would be considerable as can be seen in Table I. The December-to-December change in the CPI was chosen as the measure of inflation because the CPI appears monthly and may therefore provide the best approximation to price change from December 31 to December 31. However, since many items in the CPI are not priced every month, the choice is debatable. The computed adjustment is particularly large for 1974, when rapid inflation and a growing debt produced a $42.2 billion capital gain in real terms for the Government. Taking account of the effects of inflation on the debt for that year would be enough to turn the deficit of $10.7 billion into a surplus of $31.5 billion.

Over the postwar period, the adjustment would increase Government income in each year except 1949 and 1954, when prices declined. It would turn deficits into surpluses in eight years since 1957 so that, in the adjusted figures, surpluses would predominate. This is consistent with our earlier observation that the price-deflated Federal debt has not increased significantly during the period.

The effect of the adjustment in the past decade, when inflation rates were high, is startling. The cumulative deficit for the years 1968

Table I. Unadjusted and Inflation-Adjusted Federal Deficits

(Dollar amounts in billions)

Calendar year	Average net Federal debt[1]	Rate of inflation[2]	Adjustment for change in real value of Federal debt	Surplus or deficit (-) (NIPA basis)		Adjusted Deficit as a Percent of GNP
				Unadjusted	Adjusted	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1947	$228.9	9.0%	$20.6	$13.4	$34.0	14.6 %
1948	222.6	2.7	6.0	8.3	14.3	5.5
1949	202.2	-1.8	-3.6	-2.6	-6.2	-2.4
1950	221.0	5.8	12.8	9.2	22.0	7.7
1951	220.4	5.9	13.0	6.5	19.5	5.9
1952	222.3	.9	2.0	-3.7	-1.7	-.5
1953	227.2	.6	1.4	-7.1	-5.7	-1.6
1954	230.9	-.5	-1.2	-6.0	-7.2	-2.0
1955	231.9	.4	.9	4.4	5.3	1.3
1956	228.6	2.9	6.6	6.1	12.7	3.0
1957	223.8	3.0	6.7	2.3	9.0	2.0
1958	226.5	1.8	4.1	-10.3	-6.2	-1.4
1959	235.1	1.5	3.5	-1.1	2.4	.5
1960	238.4	1.5	3.6	3.0	6.6	1.3
1961	240.6	.7	1.7	-3.9	-2.2	-.4
1962	247.0	1.2	3.0	-4.2	-1.2	-.2
1963	252.2	1.6	4.0	.3	4.3	.7
1964	256.8	1.2	3.1	-3.3	-.2	-.0
1965	260.4	1.9	4.9	.5	5.4	.8
1966	262.4	3.4	8.9	-1.8	7.1	.9
1967	267.6	3.0	8.0	-13.2	-5.2	-.7
1968	276.5	4.7	13.0	-5.8	7.2	.8
1969	280.3	6.1	17.1	8.5	25.6	2.7
1970	285.7	5.5	15.7	-12.1	3.6	.4
1971	305.1	3.4	10.4	-22.0	-11.6	-1.1
1972	325.3	3.4	11.1	-17.3	-6.2	-.5
1973	336.4	8.8	29.6	-6.7	22.9	1.8
1974	345.9	12.2	42.2	-10.7	31.5	2.2
1975	394.4	7.0	27.6	-70.2	-42.6	-2.8
1976	471.9	4.8	22.7	-54.0	-31.3	-1.8
1977	535.2	6.8	36.4	-50.1	-13.7	-.7
1978e....	595.0	7.0	41.6	-50.0	- 8.4	-.4

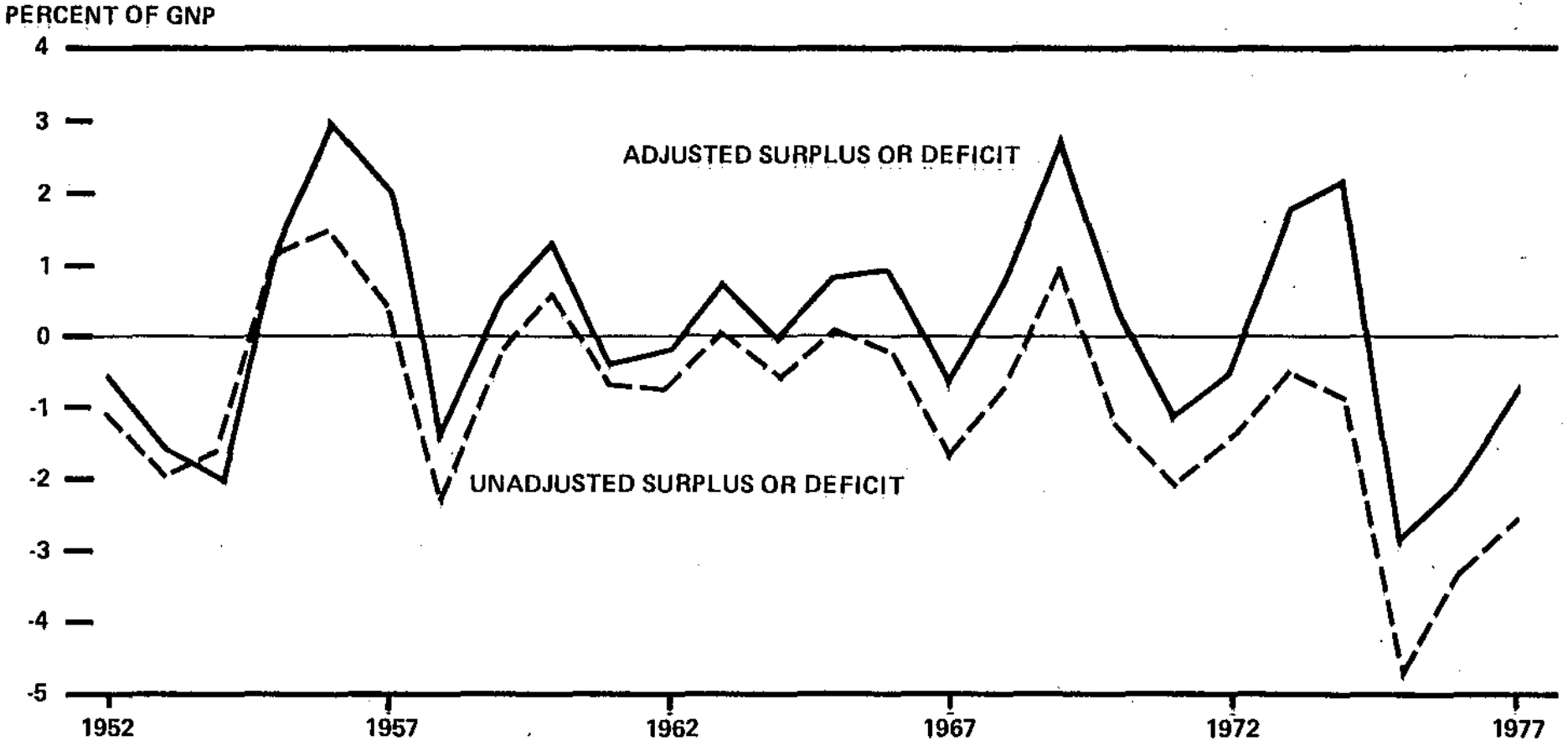
1. Average of beginning and end of year data.
2. December-to-December change in consumer price index.

e-- Estimated by author.

SOURCE: Economic Report of the President, 1976 and 1978. Column (4) = $\frac{(2) \times (3)}{100}$.

Column (6) = (4) + (5).

CHART I. ADJUSTED AND UNADJUSTED DEFICITS AS A PERCENT OF GNP



SOURCE: Table I, Column (7)

to 1977 is over $240 billion but would amount to only $15 billion after adjustment. For the past three years alone, inflation adjustment reduces the combined $174 billion deficit by almost 50 percent.

The Effect of the Budget on Capital Markets

The inflation-adjusted figures provide a truer picture of the extent to which the Federal Government has been augmenting or absorbing gross national saving in recent years. This has an important bearing on the often-expressed concern that huge budget deficits have been crowding out private investment.

Consider the outlook for 1978. For the calendar year, a reasonable estimate of the budget deficit (NIPA basis) is about $50 billion. The Federal Government will have to increase its nominal debt by a similar amount, which will tend to push interest rates above what they would be if the budget were in balance. Some marginal investment projects will be rejected because of the higher interest rates. Concern has also been expressed that large deficits are inflationary since the Fed tends to counteract pressures on interest rates by stepping up its purchases of Government securities. Thus, the Fed may finance part of the deficit by increasing the money supply more than might otherwise be desirable.

The advantage of adjusting the deficit for inflation is that it helps put these concerns in perspective. The Government's real debt will not increase as much as its nominal debt. Prices may be expected to increase about 7 percent during 1978. With private holdings of Federal debt expected to average about $595 billion, holders can anticipate real capital losses caused by inflation of roughly $42 billion. To compensate for this, current

market interest rates include substantial inflation premiums. But there is no reason to suppose that these premiums will be treated as spendable income by recipients. These payments must be reinvested if the real value of the bondholders' wealth is to be maintained.

Inflation has increased the deficit by significantly raising the nominal interest costs of the Federal Government. But insofar as inflation predictions are accurate, the additional interest payments are essentially returns of principal, which will be reinvested if the real demand for Government debt is unchanged. Thus, $42 billion of the $50 billion deficit can be returned to capital markets without the incentive of higher real interest rates. The Government's net drain on savings will be only about $8 billion for the year.[6]

If inflation turns out to be less than feared, investors will suffer smaller losses in the real value of their debt holdings than anticipated, and some portion of the large inflation premiums will become windfall gains for investors. Windfall gains would not generally be reinvested in Government debt unless the wealth elasticity of Government securities is quite high. Therefore, the Government's net drain on savings would exceed $8 billion. Greater than expected inflation would have the opposite effect. The adjusted deficit figure is computed with the actual inflation rate, and so would include any windfalls. Regardless of the accuracy of expectations, the adjusted figure gives a much better picture of the prospective net impact of Government on capital markets and national saving than the $54 billion nominal deficit.

The adjusted deficit also provides a better perspective on the possible effects of the budget on monetary policy. Because the inflation

premiums can be expected to be reinvested without affecting interest rates, five-sixths of the deficit is more or less self-financing. The Fed should not feel pressured to finance any more of the 1978 deficit than it would finance of a $8 billion deficit if there were no inflation.[7]

Measurement of Fiscal Policy

The budget surplus or deficit is a major instrument of national economic policy. It is widely agreed that the greater the budget deficit, the more stimulative is its effect on the economy. However, as a measure of fiscal policy, the reported Federal surplus or deficit has been criticized on a number of grounds. The most prominent and widely accepted criticism is that deficits are endogenously determined. Automatic stabilizers such as income taxes and unemployment compensation depend in the short run on the strength of the economy. The resulting deficits or surpluses primarily reflect this rather than overt policy decisions.

The full-employment surplus (FES), which estimates what the budget surplus would be at full employment, was developed to focus attention on purely discretionary fiscal policy. It removes the influence of automatic stabilizers by evaluating the budget at a specified level of resource utilization meant to be comparable over time. While its weaknesses are well known, the FES has become a convenient reference point for public discussion of budgets.[8] Budgets can be characterized as more or less restrictive as the FES is higher or lower. Those who think that the automatic stabilizers have just the right amount of responsiveness to changes in resource utilization can argue for an unchanging FES at some predetermined level. Those who think that automatic stabilizers are inadequate for countering business fluctuations can argue for a countercyclical FES policy.

However, the FES is improved by the same inflation adjustment as the NIPA deficit. Inflation depreciates the value of privately held Government debt. This represents a transfer, in real terms, of financial assets from the public to the Government. Like taxes, such a transfer reduces real income available for private spending. If inflation expectations are accurate, investors will require inflation premiums just equal to the loss of asset value caused by inflation.[9] In this case, inflation does not affect investors' net income. With no effect on real net income available for private spending, no economic stimulus is provided. But since current procedure is to include the higher interest costs in the Government's budget and not the change in the real value of the debt, inflation causes an increase in the deficit that has no stimulative effect. Thus, an FES deficit in an inflationary period is not necessarily more expansive than a surplus in a noninflationary period. It is obviously undesirable that a policy measure should be so ambiguous.

When inflation expectations are not accurate, the analysis is only slightly changed. To the extent that inflation is underestimated, investors' losses of capital value are not matched by inflation premiums received. Conversely, when it is overestimated, the premiums exceed the real capital loss. The effect of the error in expectations is to produce windfall losses or gains for investors. The change in real capital value is still very important to debtholders, but their perception of it is different. The windfall loss or gain is a one-time transfer to or from the Government, like a temporary tax surcharge or a tax rebate. Such losses or gains can have a significant short-run impact on the economy by reducing or augmenting, on a temporary basis, the funds available for private

spending. Like rebates and surcharges, it seems reasonable to include them in the inflation-adjusted fiscal policy measure. However, windfall gains to investors cannot be expected to be as stimulative as an equal sized permanent tax cut would be.

The inflation-adjusted FES is a better indicator for consideration of both short-run changes in policy and the long-term trend of policy. In the short run, it gives a more accurate assessment of the direction of fiscal policy. We normally say that a change to a lower FES indicates a shift to a more expansionary policy. But if the rate of inflation increases at the same time, we may be fooling ourselves. An increase in inflation means an increase in real capital losses for holders of Government bonds. This would tend to cancel the effect of the drop in the FES.

The inflation-adjusted FES is also a better focal point for discussions of the longer run. For example, the administration's earlier-stated goal of a conventionally balanced budget and full employment by 1981 was too vague. The impact of such a budget on the economy would depend on whatever the inflation rate happened to be at that time. As currently measured, a balanced budget at full employment when prices are stable will have the same economic impact as a deficit when there is some price inflation. Since inflation is widely expected to persist for many years, long-run targets in terms of an unadjusted FES may be unintentionally restrictive.

For those who believe a balanced full-employment budget is an appropriate norm, the difference between the adjusted and unadjusted numbers in recent years may be bothersome. Table II shows that while the most recent estimates of the Council of Economic Advisers indicate deficits in all but two years since 1969, the inflation-adjusted full

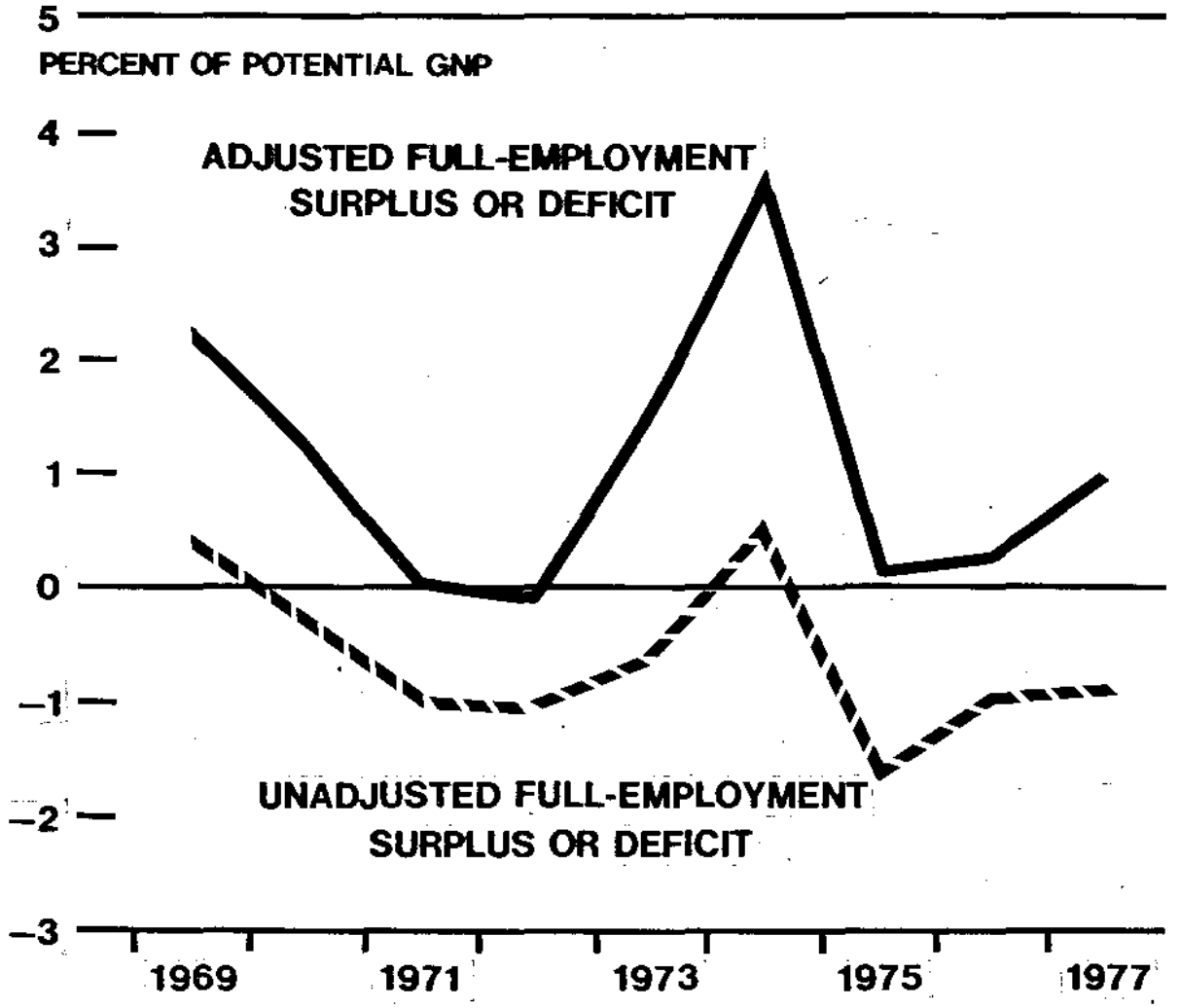
Table II. Unadjusted and Inflation-Adjusted Full Employment Federal Deficits

(Dollar amounts in billions)

Calendar year	Average net Federal debt	Rate of inflation[1/]	Adjustment for change in real value of Federal debt	Full employment surplus or deficit (-) (NIPA basis)		Adjusted FES Deficit as a Percent of GNP
				Unadjusted	Adjusted	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1969	$280.3	6.1%	$17.1	$ 3.7	$20.8	2.2%
1970	285.7	5.5	15.7	-2.7	13.0	1.3
1971	305.1	3.4	10.4	-9.9	.5	.0
1972	325.3	3.4	11.1	-11.8	-.7	-.1
1973	336.4	8.8	29.6	-8.3	21.3	1.6
1974	345.9	12.2	42.2	7.8	50.0	3.5
1975	394.4	7.0	27.6	-24.2	3.4	.2
1976	471.9	4.8	22.7	-17.3	5.4	.3
1977	535.2	6.8	36.4	-17.9	18.5	1.0
1978e ...	595.0	7.0	41.6	-17.0	24.6	1.2

1. December-to-December change in consumer price index.
e—Estimated by author.
SOURCE: Economic Report of the President 1978.

TABLE II. FULL EMPLOYMENT SURPLUS AS A PERCENT OF POTENTIAL GNP



SOURCE: Table II.

employment budget was in surplus in every year but one. Fiscal policy appears considerably tighter than the CEA's unadjusted figures indicate. The full-employment levels chosen by the Council are, however, somewhat arbitrary. If, as may well be the case, target employment levels should be lower, these surpluses do not indicate undesirably restrictive policy.

The relative levels of the FES and the year-to-year changes are virtually unaffected by the definition of full employment. Looking at the year-to-year changes, the adjustments show that the official figures significantly underestimate the swing to restraint in both 1973 and 1974. This error may have led policymakers to a more restrictive policy than they intended, contributing to the severity of the 1974-75 recession. The adjusted figures also show a stronger swing to restraint in 1977 than the conventional estimates.

Summary and Conclusion

Inflation shifts price-adjusted financial wealth from the public to the Government in a way that current budget procedure does not take into account. It does this by reducing the real value of the large outstanding Federal debt. Debtholders are compensated for their lost resources with higher interest rates, and, in general, the inflation premiums and real capital loss offset each other. The budget, however, includes only the interest payments and not the change in real capital value. Thus, the budget deficit is overstated in inflationary periods.

This can easily be adjusted for by adding to Government income in the budget the decrease in real value of the national debt that is

caused by inflation. The resulting figures provide a better perspective on the contribution of the Federal Government to national saving and on the relative expansiveness of fiscal policy. For example, with prices expected to increase 7 percent in 1978, roughly $42 billion of the probable $50 billion deficit for calendar 1978 will likely be returned to capital markets without affecting interest rates. Net Government dissaving in real terms, will be only about $8 billion rather than $50 billion. Thus, a large deficit is much easier to finance during an inflationary period. And since $42 billion of the deficit does not enter the real net income streams of its recipients, 1978 fiscal policy will be no more stimulative than an $8 billion deficit would be if prices were stable.

Rapid inflation has had similar effects throughout the past decade. Over that period, properly adjusted surpluses and deficits totaled roughly the same, so that the Government has not actually been a long-term absorber of private savings. Reappraisal of fiscal policy also shows that it was much more restrictive in 1973 and 1974 than conventional figures indicate.

Appendix

Is the full-employment surplus the best measure of policy to adjust? Various improvements in the full-employment surplus (FES) have been recommended. Several are of limited value in general forums since they depend crucially on some particular econometric model of the economy. Attempts to give different weight to changes in income taxes compared with changes in Government purchases of goods and services fall into this category. Others seek to broaden the category of nondiscretionary changes to be excluded from the policy measure. Both normal growth of the economy and inflation increase taxes faster than expenditures because of the progressive nature of the income tax. Furthermore, it is sometimes claimed that expenditures are set in nominal terms and are not automatically affected by inflation. These factors tend to make the FES become more restrictive each year in the absence of any "discretionary" changes. Adjustment for "fiscal drag," due to economic growth, and an inflation adjustment entirely different from the one considered in this paper have therefore been suggested.[10]

These two adjustments are generally undesirable for the purpose of evaluating fiscal policy. First, it is arguable that changes in the FES ascribed to fiscal drag or inflation are not discretionary. Congress is certainly aware of their effects on the budget and of the need to reduce taxes or increase real spending periodically if it wishes to avoid unwanted increases in the FES. And it is not reasonable to assume that expenditures are unaffected by inflation since the majority are indexed to prices and increase without Congressional action. For items not indexed, it is reasonable to believe that Congress intends to legislate real expenditures, not nominal ones.

An even more important disadvantage of these suggested changes, however, is that they exclude from the policy measure things that should not be excluded from policy discussion. While there is wide agreement that policy should not try to counterbalance automatic stabilizers, we may often want to compensate for the effects of fiscal drag and inflation since they may often be destabilizing. Furthermore, these effects are not systematically related to the degree of resource utilization, as are those of automatic stabilizers. A decrease in the FES deficit caused by a tax increase has just as much restrictive effect as a decrease caused by fiscal drag or inflation.

Footnotes

1. Further adjustments in corporate profits accounting have been suggested by John B. Shoven and Jeremy I. Bulow in "Inflation Accounting and Nonfinancial Corporate Profits," Brookings Papers on Economic Activity, 1975, no. 3, pp. 557-98, and 1976, no. 1, pp. 15-57.

2. Deflating by the CPI, the decline in 1967 dollars is from $294.7 billion at the end of 1950 to $303.1 billion at the end of 1977.

3. Nominal capital gains or losses representing changes in the market value of the debt, especially long-term bonds, are not considered here. These gains or losses are always reversed by the redemption date. However, in spite of the fact that the average maturity of the debt issues is about 2 1/2 years, the gains or losses may be significant in some years.

4. Since all flows in the national income and product accounts are on an accrued rather than a cash basis this would be a consistent treatment.

5. Since a small part of the Government debt is offset by Agency holdings of private liabilities, which are also affected by inflation, this adjustment may slightly overstate the effect of inflation on the Government's net debtor position.

6. Because of generally short maturities, most of the nominal interest rates on the public debt reflect current inflation expectations well. Some older bonds have relatively high or low coupon yields, reflecting the differing economic conditions that existed when they were issued. The changes in inflation expectations between the issue dates and

now are reflected in the current market values of these bonds. So, as a percentage of market value, interest payments are similar to those on new issues. Like holders of more recent issues, holders of older bonds can generally be expected to reinvest enough to maintain their real capital investment as long as their real demand for Government securities remains unchanged.

It should be clear that it is the effect of inflation on the market value of Government debt, rather than the nominal value, that matters to these holders. But the market value of the entire debt is hard to measure and, because of the preponderance of short maturities, market value of nominal value would generally be quite close.

7. Of course, in order to maintain the same interest rate as would occur with no inflation, the Fed would have to reinvest the inflation premiums it receives on its own holdings of Government securities. Such a policy could be considered essentially neutral toward the existing rate of inflation, neither exacerbating nor fighting it.

8. For the purpose of assessing the expansiveness of fiscal policy, the weaknesses of the FES are sometimes overstated. Further discussion of this point appears in the appendix.

9. Because interest payments increase lenders' tax liabilities and reduce those of borrowers, inflation premiums may exceed the anticipated rate of inflation. This need not concern us however. It is investors' demands for real Government debt that determine how much they invest. Any extra premiums to cover taxes presumably would not be reinvested or spent on goods and services, but simply used to pay taxes.

10. See, in particular, Edward M. Gramlich, "Measures of the Aggregate Demand Impact of the Federal Budget," in Wilfred Lewis, Jr., ed., Budget Concepts for Economic Analysis, Brookings Institution, Studies of Government Finance (Washington, D.C., 1968), pp. 110-27.

References

Gramlich, Edward M., "Measures of the Aggregate Demand Impact of the Federal Budget," in Wilfred Lewis, Jr., ed., Budget Concepts for Economic Analysis, Brookings Institution, Studies of Government Finance (Washington, D.C., 1968), pp. 110-27.

Shoven, John B. and Jeremy I. Bulow, "Inflation Accounting and Non-financial Corporate Profits," Brookings Papers on Economic Activity, 1975, no. 3, pp. 557-98, and 1976, no. 1, pp. 15-57.