ARTHUR M. OKUN
and NANCY H. TEETERS
Brookings Institution

The Full Employment Surplus Revisited

THE CURRENT EFFORT of fiscal and monetary policy makers to achieve disinflation without recession has put the spotlight of public attention once again on the federal budget—as well as on monetary policy and the state of private demand. Some of the discussion of the budgetary impact on the economy has focused on the recent and prospective disappearance of the federal surplus. The surplus of the federal sector in the national accounts, which was $13.5 billion (annual rate) in the second quarter of 1969, virtually vanishes in the first half of 1970. Moreover, some who have predicted that the President's budgetary program for fiscal 1971 will actually turn out in deficit have interpreted such an outcome as a shift toward stimulus in fiscal policy.

In a period of slowdown in economic activity, the movement of the actual surplus or deficit in the federal budget must be carefully interpreted. If a shift to deficit merely reflects a slower growth of federal revenues associated with a weakening of economic activity, that shift is an automatic stabilizer bolstering demand rather than a stimulus propelling the economy.

Economists have long been concerned with the inadequacy of the actual surplus (or deficit) as a measure of fiscal impact. It fails to distinguish the budget's influence on the economy from the economy's influence on the

budget. The actual surplus (or deficit)[1] is the composite result of the budget program, as defined in terms of expenditures and tax rates, and the strength of aggregate demand. To remedy the basic defect of the actual surplus as a fiscal indicator, the concept of the full employment surplus was developed. The full employment surplus is an estimate of what the federal surplus would be if the economy were operating along the path of its potential gross national product (GNP). It is thus not affected by fluctuations in economic activity that shrink or swell the revenue base relative to that associated with the path of potential growth. The full employment surplus is thus a way to focus on the policy actions that determine expenditure programs and tax rates, and to separate them from a consideration of the autonomous strength of private demand and of the posture of monetary policy.

Uses of the Concept

Although it has roots in the 1930s, the concept can be directly dated back to a proposal made in 1947 by the Committee for Economic Development (CED) that the budget be designed to "yield a moderate surplus at high-employment national income."[2] The full employment surplus was applied by E. Cary Brown in an historical analysis of the thirties, which demonstrated that the federal deficits of the period were primarily the result of automatic stabilization rather than of active stimulation.[3]

The concept was used by several economists analyzing the sluggish economic situation and outlook in 1960 and early 1961—David Lusher, James Knowles, Herbert Stein, and Charles Schultze.[4] They stressed the large shortfall of federal revenues associated with the shortfall of the

1. The paper is not going to be sprinkled with this reminder. From here on, a surplus can be positive or negative. When negative, it is a deficit. Also, "full employment," "high employment," and "potential" are used synonymously throughout the paper.

2. Committee for Economic Development, *Taxes and the Budget: A Program for Prosperity in a Free Economy* (CED, November 1947), pp. 22–25.

3. E. Cary Brown, "Fiscal Policy in the Thirties: A Reappraisal," *American Economic Review*, Vol. 46 (December 1956), pp. 857–79.

4. David W. Lusher, "Some Key Economic Variables in the 1960's," in J. A. Stockfisch (ed.), *Planning and Forecasting in the Defense Industries* (Wadsworth, 1962), pp. 33–50; James W. Knowles, "Staff Memorandum on the Relationship of the Federal Budget to Unemployment and to Economic Growth," in *1961 Joint*

economy below high employment, pointing out that fiscal policy was considerably more restrictive than was evident in the actual federal accounts.

The full employment surplus was explained in detail in the *Annual Report of the Council of Economic Advisers* for 1962. The 1964 and 1965 *Annual Reports* analyzed the President's budget program prospectively in terms of movements of the full employment surplus, and the 1966 *Report* showed it in a chart. But the concept retreated into the background thereafter, when fiscal policy became excessively stimulative during the Vietnam buildup. Because the difference between actual and potential real GNP did not exceed 1.8 percent between mid-1965 and the end of 1969, the full employment and actual surpluses told very similar stories. Actual deficits of about $12 billion in 1967 made clear the highly stimulative character of fiscal policy. The major shift to restraint was likewise clearly reflected in substantial actual surpluses during 1969.

During this period, the Federal Reserve Bank of St. Louis kept the quantitative concept before the public with its quarterly release, "Federal Budget Trends." The President's Commission on Budget Concepts endorsed the "basic ideas embodied in this measure."[5] The Committee for Economic Development also continued to nurture its child, most recently in recommending a full employment surplus of $6 billion to $9 billion for calendar year 1970 and fiscal 1971.[6] The *Annual Report of the Council of Economic Advisers* for 1970 mentions the high employment surplus (page 67) and discusses its longer-run implications (pages 82–83), although no quantitative estimates of its current size are presented.

The full employment surplus has been a useful tool for clarifying various messages, lessons, and issues concerning stabilization policy.

Economic Report, Report of the Joint Economic Committee on the January 1961 Economic Report of the President, H. Rept. 328, 87 Cong. 1 sess. (1961), pp. 119–25; statement by Herbert Stein and following discussion, *January 1961 Economic Report of the President and the Economic Situation and Outlook,* Hearings before the Joint Economic Committee, 87 Cong. 1 sess. (1961), pp. 209–25; statement by Charles L. Schultze and following discussion, *Current Economic Situation and Short-Run Outlook,* Hearings before the Joint Economic Committee, 86 Cong. 2 sess. (1961), pp. 114–39.

5. *Report of the President's Commission on Budget Concepts* (October 1967), p. 20.

6. Committee for Economic Development, *A Stabilizing Fiscal and Monetary Policy for 1970* (CED, December 1969), p. 10.

INDICATOR OF CHANGES IN FISCAL POLICY

A higher full employment surplus is an indicator of a more restrictive fiscal policy. The concept can be used in comparing two alternative fiscal programs that might be applied in a given forthcoming period, or to compare the degree of fiscal restraint in two different periods. For appropriate comparisons over a considerable time interval, the full employment surplus should be viewed as a percentage of potential GNP in order to take account of the growing size of the economy. Most often, the comparison is made from one year to the next, showing whether the net shift of fiscal policy is toward restriction or stimulus. The desirability of such a shift should be appraised in terms of the current and target levels of economic activity, current and planned monetary policy, and expected changes in the strength of private demand. The full employment surplus helps to keep the analytic eye on the ball.

GUARDIAN AGAINST PERVERSE FISCAL POLICY

From the time of the 1947 CED statement to the present, economists have felt the need to warn policy makers not to set a target for an actual surplus independent of the level of economic activity. Such a strategy would have perverse economic effects, leading, for example, to added outlays (or tax cuts) if revenues are swollen by a boom. It is not hard to imagine now that, if revenues for fiscal 1971 should have to be revised downward from the administration's estimates because the economy is weaker than anticipated, some would propose to preserve the projected actual surplus and hence to reduce expenditures, thus further weakening the economy. In effect, putting the focus on the full employment surplus guards the automatic stabilizers in the political decision process.

STANDARD FOR LONG-TERM FISCAL POSTURE

The mirror image of the full employment surplus is the excess of private investment over private saving (including the surplus of the state and local sectors) required to achieve equilibrium at full employment. Economists have some rough notion of how private investment would normally compare with private saving for an assumed monetary policy. Most longer-

term projections of a desirable and feasible pattern of economic activity provide for some moderate positive full employment surplus to avoid excess demand and tight money. On the other hand, nobody would prescribe, as a normal diet, full employment surpluses amounting to 2 percent of GNP, such as prevailed in 1960 and 1961. The full employment surplus tends to keep discussions of long-run fiscal strategy within a reasonable range. In the early sixties, those who valued the balancing of the budget as a fiscal discipline could be assured that, even with a big tax cut, the budget would still come into the black at full employment. Today, legislators can be reminded to leave room for some full employment surplus in their long-run plans.

CRITERION FOR LONG-RUN MONETARY POLICY

How much private investment demand exceeds private saving at full employment depends critically on the character of monetary policy. Thus the appropriate size of the full employment surplus must be evaluated with regard to the desired or probable posture of monetary policy. For any given utilization target, the choice of a larger average surplus over the long run requires a more expansionary monetary policy and implies a desire to shift resources into homebuilding and other investment through the mechanisms of private markets.

DELINEATOR OF FISCAL DIVIDEND AND DRAG

The increases in annual revenue associated with economic growth provide a useful benchmark in fiscal planning. In the early sixties, it was important to stress in public discussion that, because of this annual fiscal dividend, the budget becomes tighter if expenditures and tax laws stand still. If allowed to operate, fiscal drag would tend to hold the economy below its potential growth. Today the fiscal drag message lingers only in nostalgia. The relevant current lesson is that no more than the annual fiscal dividend can be added to spending (or given away in tax cuts) without making fiscal policy more stimulative. And a further caveat is required—that much of the dividend has been committed in advance through built-in increases in expenditures or already enacted tax cuts. Although the lesson has changed, the same concept helps to teach it.

Quantifying the Concept

Most of these uses require a quantification of the full employment surplus in a consistent time series. The standard calculations have been based on an assumed level of real output equal to "potential output," which in turn is the estimated trend line of production consistent with an average unemployment rate of 4 percent of the civilian labor force.[7]

The implicit price deflator for the GNP, as reported in the national income accounts, is used to convert potential GNP into current dollars. Then income shares—such as personal income and corporate profits—are estimated on the basis of potential GNP in current dollars; and full employment estimates of federal revenues are then derived in terms of the tax laws applicable to the period in question.

Full employment expenditures differ from those actually reported in the national accounts only through the adjustment of unemployment compensation benefits to reflect differences of the actual unemployment rate from the target of 4 percent. In point of fact, some other types of federal expenditures, such as social security benefits and farm support payments, may be influenced by the level of economic activity. But that relationship is not readily quantified or very dependable. Furthermore, at any given point in time, many—perhaps most—federal expenditures are not subject to control, having become built in as a result of previously enacted legislation and previous executive action. Yet these outlays are properly viewed as discretionary, rather than automatic, in the sense that they are not dependent on the current level of economic activity.

The full employment surplus is simply the difference between full employment revenues and full employment expenditures. The difference between the full employment and actual surpluses for any period measures the automatic stabilization of the fiscal system—the impact on revenues (and unemployment benefits) resulting from deviations of actual economic activity from the path of potential. The change in the full employment surplus from period to period is equal to:

7. Nancy H. Teeters, "Estimates of the Full-Employment Surplus, 1955–1964," *Review of Economics and Statistics,* Vol. 47 (August 1965), pp. 309–21; Federal Reserve Bank of St. Louis, *Review,* Vol. 49 (June 1967).

(a) the increase of federal revenues, with unchanged tax rates and base, associated with economic growth along the potential path,

plus

(b) the dollar value at full employment of net changes in tax rates taking effect in that time interval,

minus

(c) the increase in adjusted expenditures.

The full employment surplus is linked to the federal sector of the national income accounts. This concept of the budget is convenient because it fits with the rest of the national accounting system. Two major conceptual differences between the federal sector and the recently adopted unified budget affect the surplus in the two measures. First, some receipts and expenditures in the federal sector are on an accrual basis, while the unified budget is entirely on a cash basis. Second, the federal sector excludes all lending. Federal lending clearly has economic significance, but it should be viewed in the context of monetary and debt management policy rather than fiscal policy.

Thus defined and thus calculated, the full employment surplus has been a useful tool for the presentation and public discussion of some key issues in stabilization policy. It offers a simple, one-parameter description of the macroeconomic effects of fiscal policy for presidents, legislators, journalists, and concerned citizens. In particular, it offers them a clearly superior alternative to the actual surplus.

It is not, and was never meant to be, a precise measure of fiscal impact for use by the expert. Indeed, the expert has no dire need for a single, publicly available summary number. The internal development of a budget program by government fiscal experts can and should be based on more sophisticated concepts and computations. The research economist specializing in fiscal policy is free to exercise his own options. He will not summarize fiscal policy if he chooses to develop a structural econometric model; instead, he will apply many fiscal variables and many income-expenditure relationships to spell out the impact of the budget on the economy. If he pursues a shortcut technique relying on a single independent variable to characterize fiscal policy, he can and will concoct his own, using whatever sophisticated refinements, weights, and transformations he considers useful.

At the current stage of knowledge of fiscal policy and of income-

expenditure relationships, the specialists do not agree on the best recipe. Awaiting the development of firm scientific knowledge and of professional consensus on the precise measurement of fiscal impact would sacrifice the opportunity to provide a useful quantified concept for informed public discussion.

In short, the aim should not be to solve all the problems of aggregate demand analysis in the calculation of the full employment surplus, but rather to achieve professional agreement on the procedures for defining and estimating the full employment surplus as a useful and standardized quantitative indicator of fiscal impact. As refinements are established and agreed upon, they can be incorporated into the measure to increase its accuracy. Most economic time series are used as indicators rather than precise measures—the unemployment rate as an indicator of the tightness of labor markets, published series on operating rates as indicators of excess capacity in industry.

Professional users should be fully aware of the many limitations and problems associated with the full employment surplus. Some of these will now be discussed—weighting, timing, price adjustment, the target path, and hypothetical revenue estimation. Updated historical estimates of the full employment surplus are then presented, and the President's 1971 budget is quantified and discussed in terms of the full employment surplus.

Weighting Components

Like the actual surplus, the full employment surplus implies that all federal outlays have equal bang for a buck and that all federal revenues have an equal and opposite impact on demand. No one would seriously defend that proposition. Suggestions for weighting the various components have been made by Gramlich and Musgrave.[8]

On the expenditure side, a weighting scheme can begin by conventionally assigning a coefficient of unity to a dollar of government purchases of goods and services. Of course, that is not an estimate of the total ultimate impact on real GNP. In an underemployed economy with an accommodative monetary policy, the spending multiplier provides that estimate.

8. Edward M. Gramlich, "The Behavior and Adequacy of the United States Federal Budget, 1952–1964," *Yale Economic Essays,* Vol. 6 (Spring 1966), pp. 134–35; Richard A. Musgrave, "On Measuring Fiscal Performance," *Review of Economics and Statistics,* Vol. 46 (May 1964), p. 213.

Because the marginal propensity to consume of individuals is less than unity, government transfers to persons would receive a coefficient reflecting that fact—perhaps 0.9. The appropriate weight for federal grants to states and localities raises more significant empirical issues. The weight should be less than unity to the extent that grants tend to increase state and local surpluses, reduce pressure on these governments to raise their taxes, or generate extra transfer payments rather than added direct purchases. On the other hand, given the matching provisions of some federal grant programs, the grants might actually magnify purchases made by states and localities and even shift their budgets toward deficit. Federal sudsidies and payments of net interest probably exert less stimulus per dollar than the outlays mentioned above.

On the revenue side, the weight on personal taxes should be somewhat less than unity to reflect the marginal propensity to save of taxpaying households. In terms of the impact on national product in money—rather than real—terms, the coefficient of restraint on indirect taxes perhaps might be somewhat smaller than that on personal taxes, given the evidence that excises are shifted forward into prices.

The treatment of the corporate tax is the most difficult problem. The correct coefficient depends on the shifting of the corporate tax, the restraining effect of the unshifted portion on corporate investment spending, and the impact on consumption through induced changes in dividend payments and in the valuation of equities. These issues are subjects of major professional controversy and no clearcut answer can be given. The considerations do point, however, toward a somewhat smaller coefficient of restraint on corporate than on personal taxes.

The estimates of the full employment surplus since mid-1955 (shown in Table 2 near the end of this paper) have been recalculated with several weighting systems. The following set of weights seems reasonable:

Expenditures		*Revenues*	
Purchases of goods and services	1.0	Personal taxes	−0.9
Transfer payments to persons	0.9	Corporate taxes	−0.75
Grants to state and local governments	0.9	Indirect taxes	−0.9
Interest	0.7	Payroll taxes	−0.9
All other	0.7		

This (or any similar) weighting system illustrates the point of the balanced budget multiplier theorem: A dollar's worth of federal purchases is not completely offset by a dollar's worth of tax revenue. As in most plausible sets of weights, the average coefficient of restraint applied to the revenue side is smaller than the average coefficient of stimulus from expenditures. As a result, the level of the weighted full employment surplus is lower than that of the unweighted one. For the period between mid-1955 and the end of 1969, the average unweighted full employment surplus as a percentage of potential GNP amounts to 0.75 percent. On the other hand, the weighted scheme yields an average full employment *deficit* of 0.63 percent of potential GNP for that period.

But if the difference between the two were consistently 1.38 percent of potential GNP, the weighting scheme would be of little consequence. The level of the measure is of no particular interest. The importance of weighting hinges on whether changes in the composition of the budget or in the size of the budget relative to GNP are sufficiently large to produce a different profile of movements in the weighted and unweighted full employment surplus. In fact, for the past decade and a half, the profiles have been exceedingly similar. In quarter-to-quarter changes of the two series, the biggest disparity shows up in the movement from the fourth quarter of 1968 to the first quarter of 1969: The weighted figure shifts toward restraint by $9.4 billion while the unweighted one shifts in that direction by $10.7 billion, a disparity of $1.3 billion, or about 0.15 percent of GNP. Another disparity in quarterly movements amounting to 0.15 percent of potential GNP occurs from the fourth quarter of 1967 to the first quarter of 1968. Between mid-1955 and 1967, no quarterly disparity is as large as $1 billion.

On an annual basis, the biggest disparities in movement are from 1967 to 1968 and from 1968 to 1969; in each case the unweighted series shows a slightly more than $2 billion greater shift toward restraint than the weighted series. Over the two years combined, the unweighted figure shifts to restraint by $21.6 billion while the weighted one shifts by $17.3 billion. No other annual disparity exceeds $800 million. The most restrictive period by both measures is the year 1960, with the first quarter taking the prize as the most restrictive of all. Both measures reveal the period from the beginning of 1967 to mid-1968 as clearly the most stimulative. Nor is the long-term trend different: 1956 and 1969 are years of somewhat above

average fiscal restrictiveness by both measures. In short, any interesting statement about fiscal policy that would emerge from one of these series could be made with the support of the other.

Although future budget plans point to a fairly significant drop in purchases as a fraction of total federal outlays, they also confirm the relative insignificance of weighting. The shift in the composition of expenditures between calendar 1969 and 1970 is equivalent to a restraining action of about $800 million. The shift projected between 1969 and 1975, according to the *Annual Report of the Council of Economic Advisers* for 1970, is equivalent to about $1 billion of restraint.

It is reassuring that the full employment surplus consistently tells the same story whether it is unweighted or weighted by the illustrative scheme, for disagreement within the profession on the appropriate weights creates a serious obstacle to the weighting of components in a time series designed for broad use and discussion. For example, in contrast to the weights selected as most reasonable above, Musgrave has expressed his preference for coefficients of 1 on grants and subsidies, 0.3 on net interest, and −0.5 on corporate taxes.[9]

It is surely more practical to agree not to weight—and to remember that omission—than to negotiate the coefficients. As indicated above, the omission is generally not serious.

If there were to be a major upheaval in the composition or size of the budget, weighting would have to be borne in mind. Moreover, major issues occasionally arise concerning the appropriate weighting of a specific fiscal action. For example, according to a number of studies, the investment tax credit had a particularly large impact per dollar. And a temporary suspension of that measure—such as occurred during 1966 and 1967—might have been expected to have an especially magnified effect. On the other hand, theoretical reasoning suggests that a temporary corporate income tax imposes relatively little restraint. Some discount on the restrictiveness of the individual income tax surcharge was also called for in light of its temporary character, although the relevant empirical studies generally

9. Even so, the application of Musgrave's weights does not significantly change the profile of movements shown by the unweighted full employment surplus. Prior to 1967, only two quarterly movements disagree by as much as $1 billion. The most noticeable difference is that fiscal policy is nearly as stimulative in 1968 as in 1967 by the Musgrave weights, reflecting the lower coefficient on the corporate surcharge. But by the end of 1969, the two measures are back in step.

show only a small difference between the marginal propensities to consume out of small windfalls and out of regular income.

These are significant issues, but their resolution cannot be built into a standard weighting system. Rather they should be handled as reminders and footnotes to be analyzed specifically when they become relevant. The use of the full employment surplus as an indicator of fiscal impact should not blind us to these other considerations.

Timing Issues

In some respects, the full employment surplus is a static concept. It describes how much fiscal policy is pushing the economy in a given period —it does not spell out the expected timing of the resulting movement of economic activity. Some dynamic multiplier process is implied, but not specified; the time phasing of the subsequent impact is left to be investigated by econometric studies. Indeed, the time shape is likely to vary for different types of fiscal actions. The multiplier impact flowing from grants to states and localities may be less rapid than that associated with an increase in transfer payments to persons, even if both have ultimately equal stimulative effects per dollar.

Sometimes, however, the choices in timing become issues of kind rather than merely of degree. In the case of changes in the corporate tax base or rates, the national accounts annualize the impact over a calendar year. Thus a legislative action that affects liabilities during the year it is taken is reflected in subsequent data as a fiscal stimulus or sedative for periods in advance of its enactment. Starting with the first quarter of 1962, the federal sector of the national accounts reflects the reform of depreciation regulations that was made in July 1962 and the investment credit that was enacted in October 1962. Similarly, the corporate tax surcharge, which was not enacted until June 1968, shows up at the start of that calendar year.

A related problem arises in the case of increases in the payroll ceiling for social security taxes. In point of fact, such increases have negligible effects on aggregate take-home pay until late in the calendar year, since the worker pays social security contributions at an undiminished rate during the year until he reaches the ceiling for that calendar year. Yet, starting with the first quarter, the seasonally adjusted national accounts reflect the

full impact of any rise in the payroll tax base. Surely, these oddities of annualizing need to be recognized and taken into account. This can be done either by footnoting the amounts at issue in the relevant quarters or by adjusting full employment revenues differently from actual revenues. We prefer the former route in order to avoid another wedge between actual and full employment revenues.[10]

The annualizing problem is probably minor compared with other uncertainties about the timing of the fiscal impact of tax changes. Most major tax actions hang in the legislative balance for a considerable time before enactment and, during that period, private decision makers try to predict the ultimate outcome. Tax proposals can have impacts before they are enacted into law and, indeed, even if they are ultimately rejected. Moreover, when tax provisions are legislated far in advance (as in the 1969 law), they can influence private demand before they have any direct impact on after-tax incomes.

The timing problem on the expenditure side of the accounts has been given special and detailed attention by Murray Weidenbaum.[11] He has stressed that decisions to increase procurement may stimulate economic activity before they actually affect federal purchases. In particular, they would show up as private inventories of purchased materials and goods-in-process before delivery to the federal government. The Office of Business Economics of the Department of Commerce has estimated on an annual basis the inventory investment associated with the step-up of defense procurement since 1965. Obviously, these calculations are of a highly tentative and tenuous character. They show the following rates, in billions of dollars, of inventory investment attributable to defense activity:

1965	0.4
1966	2.6
1967	2.1
1968	1.3
1969	1.2

10. It may be possible to develop a new seasonal pattern. We would insist that quarterly figures jibe with annual ones. If there were a good alternative, the national income accountants would not be following their current practice in the calculation of actual revenues.

11. Murray L. Weidenbaum, "Impact of Vietnam War on American Economy," in *Economic Effect of Vietnam Spending,* Hearings before the Joint Economic Committee, 90 Cong. 1 sess. (1967), p. 199. See also Harvey Galper and Edward Gramlich, "A Technique for Forecasting Defense Expenditures," *Review of Economics and Statistics,* Vol. 50 (May 1968), pp. 152–54.

From 1965 to 1966, the rise of $2.2 billion in the rate of inventory investment represents an added fiscal stimulus of some significance, although it is not so large as Weidenbaum and Galper and Gramlich have suggested. This is another fiscal consideration that must be borne in mind as an addendum to the full employment surplus. It clearly cannot be built into any quarterly time series nor can it be reliably predicted, given present data and knowledge.[12]

Adjustment for Prices

Standard calculations of full employment revenues have been based on a concept of potential GNP in current prices in which real potential GNP is multiplied by the *actual* price level (GNP deflator) of that period. Because actual prices are thus incorporated into historical estimates of the full employment surplus, no allowance is made for automatic stabilizing revenue gains due to the price acceleration of excess demand inflation.[13]

The President's Commission on Budget Concepts spoke out strongly on this issue:

> . . . If the high employment surplus is to be used as a measure of budget impact in a period when demand is strong and prices rising more than normally, some allowance for the effect of rising prices on budget revenues should be made to avoid understating the stimulative impact of the budget.[14]

The understatement of fiscal stimulus referred to by the commission arises in the following way: When actual output exceeds potential output and prices accelerate, actual federal revenues are swollen by both the added real incomes and the inflation. Yet, while the revenues associated

12. This issue is not unique to the federal sector. Private orders for machinery and equipment and contracts for private construction also generate inventory investment before they are registered as fixed investment.

13. This issue was recognized in the pioneering 1947 statement of the Committee for Economic Development and was raised anew by Herbert Stein in private correspondence during 1966. Edward M. Gramlich discussed this problem in some detail in 1967; see "Measures of the Aggregate Demand Impact of the Federal Budget," in President's Commission on Budget Concepts, *Staff Papers and Other Materials Reviewed by the President's Commission* (1967), pp. 431–45. In fact, the taxation of capital gains on inventories and other assets does introduce some automatic stabilizing revenue gains while prices are rising rapidly.

14. *Report of the President's Commission on Budget Concepts,* p. 21.

with extra real output are reflected as an automatic stabilizing element in the budget, the added revenues due to acceleration of prices are built into full employment revenues. The impact of higher prices on federal expenditures is neither as prompt nor as automatic as that on revenues. Thus excess demand inflation can make the fiscal program look more restrictive ex post than ex ante, merely because autonomous private demand or monetary policy shifted into higher gear or because the budget itself was inappropriately expansionary. Some adjustment for inflation is hence appropriate, but it is not clear what specific adjustment will do the job.

The bulge in output and the bulge in prices are treated asymmetrically in the calculation of full employment revenues. But the problem cannot be solved by a consistent symmetrical treatment over a period of years, because the two bulges do not behave symmetrically over the longer run. Suppose the economy starts at potential with output growing 4 percent a year and prices creeping up at a "normal" rate. A boom then pulls both output and prices above their respective trend paths. If the boom ends and output returns to potential, the old path should essentially still be a reasonable measure of potential output. But empirically the price level works on a ratchet; although the rate of increase in prices may come back down to normal, the level of prices will not roll back just because excess demand is eliminated—it will stay above the old path.

This fact of life is reflected in economic policy. A rollback of the price level is not considered by any government to be a desirable or feasible objective, once inflation has been experienced. The aim is to restore a tolerable rate of price increase rather than to return to any particular target price path. Thus it would not be satisfactory to draw a "normal path" of prices and to stick to that path for calculating full employment revenues regardless of what happens. At some point, bygones on the price level must be treated as bygones. Unlike the path for potential output, the future normal path for prices is subject to major revision in light of past deviations from that path.

With due apologies, the reader is asked to plow through the following example. Suppose real output exactly matches potential at $500 billion in year zero; meanwhile, prices creep upward at a "normal" rate of 2 percent a year. Revenues, let us say, are always 20 percent of GNP. In year zero, the actual budget is balanced, with revenues and expenditures both equal to $100 billion. The full employment surplus, like the actual surplus, is clearly zero, as shown in Table 1. So far, everything is fine.

Table 1. Illustrative Calculation of Full Employment Revenues in Inflation

Year	*Expenditures*	*Revenues*	*Surplus*	*GNP*	*Deflator*
		Ex ante			
0	100	100	0	500	100
1	106	106	0	530	102
2	112	112	0	560	104
		Actual			
0	100	100	0	500	100
1	106	111	5	555	104
2	112	114	2	570	106
		Full employment calculation (current practice)			
0	100	100	0	500	100
1	106	108	2	540	104
2	112	114	2	570	106

Now consider year one. Suppose expenditures are set at \$106 billion. If real output continued to match potential, it would grow 4 percent, and prices would rise another 2 percent. Revenues would then also be \$106 billion. Prospectively, the full employment surplus is zero once again.

Suppose, however, that private demand surges in year one. Real output grows 7 percent while prices rise 4 percent, yielding a GNP of about \$555 billion. Actual revenues then rise to \$111 billion. Meanwhile, suppose expenditures are unaffected by the boom and go to \$106 billion as anticipated. The actual surplus is thus \$5 billion. The \$5 billion bulge in revenues due to the boom is, in effect, the sum of a \$3 billion bonus resulting from the 3 percent rise in real output, and a \$2 billion increment due to the extra 2 percent jump in prices. The former portion is eliminated from the full employment calculation; but the latter gets folded into the estimate of the full employment surplus when full employment revenues are calculated in terms of the actual deflator of 104 for year one. Clearly, the ex ante zero estimate of the full employment surplus was a better measure of fiscal impact than the ex post estimate of \$2 billion. The apparent lesson is: Don't use actual prices of year one; stick with the normal deflator of 102 and calculate full employment revenues from a money potential GNP based on that deflator. The solution looks easy.

It is not. Problems appear when year two is considered. One possibility is to stick to your guns. If the normal price level was 102 in year one and if 2 percent is still the estimated rate of price rise at potential for the long

run, the normal deflator for year two might conceivably be taken as 104. In that event, full employment revenues for year two would be taken ex ante as $112 billion. Suppose, for a moment, that expenditures are also set at that level. Suppose further that real output grows only 1 percent and thus returns to the real potential path; nonetheless, prices are still going to rise. Even if they rise by only a normal 2 percent, the deflator for year two will be 106 and GNP will be about $570 billion. The realization of potential output will thus bring in $114 billion of actual revenues and an actual surplus of $2 billion. Private investment has to exceed private saving for full employment to be achieved, even though the full employment surplus is supposed to be zero.

If this paradox seems tolerable for a year, try it for longer. Suppose the inflationary boom continues for four years, with prices rising steadily at 4 percent a year and a bulge in the actual price level above the assumed normal level amounting to 8 percent. If actual output finally slowed down to match potential in year five and prices slowed down to their normal rate, the actual surplus might be $8 billion when the full employment surplus was allegedly zero. With the old normal price path as the basis for a calculated full employment surplus of zero in year five, one would be saying: At a deflator of 110, private investment would merely have to match private saving at high employment. That is not an illuminating proposition in a world where the price deflator is at least 118. The budget really has become a lot more restrictive.

The introduction of one further note of realism into this example will reduce the problem, but not eliminate it. In point of fact, some government expenditures will, after a lag, respond more or less automatically to inflation. For example, a formula that gears pay increases for federal workers to the movement of private wage rates has that effect. If full employment expenditures are adjusted downward to exclude such inflation-induced outlays, the resulting estimate of the full employment surplus will be a less unrealistic measure of fiscal impact. But there is no reason to believe that the automatic price elasticity of expenditures is large enough to cure the problem.

Clearly, at some point, the ratchet in the price level of the real world must be reflected in the calculation of the full employment budget. The key issue is when and how bygones should be accepted as bygones. In the absence of any evident "right answer," all one can do is legislate a statute of limitations. The annual character of the budget-planning process makes

a one-year period appealing. For a period of this length, federal expenditures can be reasonably regarded as not automatically responsive to concurrent price increases—an assumption that would be unrealistic over the longer run. If the price path for the calculation of full employment revenues can be set forth a year in advance, the calculation is made independent of economic activity (both predicted and realized) for that period, and the worst offenses of current practice are eliminated. In a boom year, added actual revenues resulting from extra output and those due to extra price increases are both treated as automatic stabilizers that make the actual surplus exceed the full employment surplus.

If a price adjustment is to be made, it requires a rule or convention under which the potential GNP in money terms for a year is independent of the actual (or predicted) price behavior during that year. Can any rule of reason be devised?

Here another fact of economic life rears its ugly head. In addition to its ratchet behavior, the price level also displays momentum in its pace of advance. After excess demand is eliminated, the *rate of increase* in prices continues to be above normal for some time. This momentum would not be allowed for in a rule that defined normal prices of the current year as last year's actual prices marked up by the long-run normal rate of upward creep in prices. On the other hand, if the calculation of full employment revenues is based on a continuation of the past year's inflationary rate of price increase, it assumes no slowdown of prices.

The first rule—back to the normal rate of price increase immediately—seems to produce too low a result, while the second rule—assume continuation of recent rates of inflation—seems to yield an implausibly high deflator. The compelling conclusion emerges that one should average and get something in the middle. A compromise rule is that the price level associated with the calculation of full employment revenues should allow for disinflation over a year's period that brings the trend of price increases halfway back to the normal rate. If prices rose 4 percent last year and if 2 percent is the normal rate, this year's potential price level should be taken as 3 percent above last year's actual price level.

The resulting formula for calculating the relevant potential price (P^*) path is:

$$P_T^* = \frac{P_{T-1}}{2}\left[1.02 + \left(\frac{P_{T-1}}{P_{T-2}}\right)\right].$$

On a quarterly basis, the formula can be modified to the following:

$$P_t^* = \frac{P_{t-4}}{2}\left[1.02 + \left(\frac{P_{t-4}}{P_{t-5}}\right)^4\right].$$

The proposed rule is intended only as a convention that yields results that are not unreasonable, that accepts bygones as bygones in a systematic way, and that responds to the recommendation of the President's Commission on Budget Concepts. It is not meant to forecast how prices would behave if output returned to potential. It is surely not intended to describe or prescribe the ideal transitional process of price deceleration once excess demand inflation has occurred.

The formula given above applies to cases of unusually low rates of price increase as well as to inflation. And in principle it should be symmetrical. If prices advance at a subnormal rate in a slack economy, actual revenues are depressed by the departure below the normal price path as well as by the gap in real output. Both types of revenue shortfall should be classified as automatic stabilizers.

Empirically, however, the issue is not quantitatively significant during periods of slack. The old rule of using actual prices as potential prices is quite adequate. The biggest *positive* difference since mid-1955 between the price deflator yielded by this formula and the actual deflator occurs in 1961 and amounts to 0.7 percent. This would increase the estimate of full employment revenues by approximately three-quarters of a billion dollars.

The 2 percent figure for the normal upward trend of prices at 4 percent unemployment was meant to be illustrative throughout. Nobody knows what the correct number is or will be, or how it might be influenced by policy measures to improve the trade-off. Probably, few members of the profession believe it is as low as 2 percent. But the very fact that 2 percent is not a down-the-middle empirical forecast may make it a more acceptable standard for a conventional calculation.

Unanticipated inflation need not result solely from excess demand. In principle, the full employment surplus calculation should treat such price surprises differently. Returning to the illustration, suppose that money GNP in year one had risen 6 percent, just as targeted ex ante. But suppose the trade-off proved more unfavorable than had been anticipated and the 6 percent rise in money GNP reflected a 3 percent increase in prices and a growth of real output of only 3 percent. The actual budget might be balanced, just as projected. But the 1 percent shortfall in real GNP below potential testifies to the fact that the full employment surplus was positive; if potential output had been realized, revenues would have exceeded ex-

penditures. If 3 percent a year must be accepted as an irreducible normal trend of prices at potential output, then society must reconsider its targets, deciding either to accept a higher normal rate of price increase or else a higher unemployment target (and thus a lower path of potential output).

On the other hand, when output is below potential, prices may increase rapidly as a result of transitional frictions associated with a very rapid rate of growth or a major shift in the composition of demand. The extra revenues collected from the added price increases during such a period would help to moderate the climb, and can be regarded as automatic fiscal stabilizers that work when reasonable speed limits are exceeded.

These issues become empirically relevant in interpreting the behavior of prices and output during 1956–57. At that time, actual output did not exceed estimated potential, nor did the unemployment rate fall below 4 percent. Yet prices accelerated markedly. One might argue that the normal price path should not be taken as lower than actual prices since output did not exceed potential. On the other hand, the adjustment can be defended on the grounds that the price rise was "abnormal," reflecting an excessive speed of advance in 1955, sectoral bottlenecks, or other special factors. If the price adjustment is made, it lowers full employment revenues for fiscal 1957 by about 1½ percent, or a little more than $1 billion.

Actual output has typically exceeded potential during the inflation since 1966. The formula set forth above calls for an adjustment below the actual GNP deflator throughout the period since the second quarter of 1966 by amounts varying up to 1.9 percent, or nearly $4 billion of full employment revenues (see Table 3 in the concluding section).

In summary, the problem of price adjustment in the calculation of full employment revenues is a thorny conceptual issue that has no self-evident satisfactory solution. The rule proposed here is awkward, inelegant, and arbitrary. Yet it avoids some pitfalls and paradoxes in existing practice. Until somebody has a better solution, the alternatives facing the profession are to live with a conventional rule or to live with no adjustment for inflation—remembering what we are doing in either case.

The Target Path

Price instability is just one possible source of problems in estimating the level or growth of full employment revenues. Some of the others are as large or larger in quantitative importance.

One problem of a conceptual nature arises when the unemployment rate does not bear its usual relationship to actual and potential output. The year 1969 provides an egregious example (so did 1956 and the first half of 1957). In 1968, actual output exceeded estimated potential output by 1.1 percent and the unemployment rate was 3.6 percent of the civilian labor force. The distance of the unemployment rate below 4 percent—0.4 percentage point—was consistent with the 1.1 percent overshoot of output, on the basis of past experience. In 1969, however, output just matched potential and the unemployment rate "should" have come back up to 4 percent. In fact, it fell a bit further to 3.5 percent. Longer-run estimates of the path of real potential output are not being revised down on the basis of this reading; rather the experience is attributed to transitory developments such as labor hoarding, or to a normal lag of employment demand behind shifts in demand for output.

The calculations of full employment revenues are geared to potential output as estimated from longer-term trends of the labor force, productivity, and hours worked. They are linked only indirectly to the unemployment rate. The quantitatively less important difference between potential and actual payments of unemployment compensation benefits will, however, directly reflect the current unemployment rate.

One could conceivably argue that the 4 percent unemployment target path should take priority over the trend path of potential GNP when the two disagree. In effect, an interim potential GNP that matched 4 percent unemployment would be drawn below the trend potential path, and the associated estimate of full employment revenues would be marked down correspondingly. In 1969, that downward adjustment would be substantial, perhaps $4 billion or $5 billion. The issue is whether the calculation should tell what the budget would be doing at a GNP that yielded 4 percent unemployment (accepting the past history of actual output and employment), or whether it should be linked to a steady path of output that would be "basically" consistent with 4 percent unemployment. The choice of the former alternative would open up a Pandora's box of dynamic and transitional problems. And there is less compelling reason to confront these problems than those associated with price fluctuations. In this instance, using the trend of potential output seems quite tolerable and does no violence to the concept. Obviously, if experience suggested that estimates of potential GNP were out of line for a considerable period, some adjustment would have to be made.

We just have to remember what we are doing. Lags and wiggles in the

relationship of unemployment to output create inescapable problems in the formulation of fiscal and monetary policy. The kind of phenomenon experienced in 1969 may point to the need for especially restrictive policies on the aggregate demand for output if demand pressures on the labor market are to be eased promptly. But that is an argument for a *higher* full employment surplus (given the stance of monetary policy) rather than for a redefinition of the measure.

Revenue Estimation for a Hypothetical World

The estimation of full employment revenues from a given potential money GNP involves all the problems of forecasting federal revenues on a given economic projection, and a few additional ones. Just as the standard revenue-estimating problem of translating a given personal income into the level of personal income tax payments requires assumptions about such issues as the magnitude of taxable capital gains, the amount of nontaxable income, and the size distribution of income, so these same questions must be answered in some explicit or implicit way in the full employment estimate of personal tax revenues. An estimate of "normal" growth in revenue derives a tax base from a given money potential GNP and assumes some "normal" full employment trend of capital gains, income distribution, and the like. The revenue estimator dealing with the real world gets one annual observation per year to check the accuracy of his techniques, but the estimator of full employment revenues gets directly relevant observations only when the economy is close to the full employment path.

For a given money GNP, the biggest source of uncertainty in the revenue estimation for the real world concerns the magnitude of corporate profits. Because the tax rate on corporate profits is much higher than typical rates on personal income, a shift of one dollar from personal income to corporate profits (out of a given dollar total of GNP) adds more than twenty-five cents to federal revenues.[15] The uncertainty about the magnitude of corporate profits is an even more critical problem to the estimator of full employment revenues. Directly or indirectly, it is usually the largest source of difference among estimates of the full employment surplus for a given budget program.

15. There are other revenue effects beyond this primary one. Social security taxes would tend to be somewhat lower if there is a shift toward profits and away from wages. Changes in dividends should also be taken into account.

In fact, however, the most serious problems involving corporate profits taxes in the calculation of the full employment surplus are conceptual issues rather than uncertainties of estimation. Even if profits were readily predictable for any given actual GNP and potential GNP, the calculation of corporate tax revenues at full employment would require some difficult decisions about what is to be reflected in the difference between actual and full employment revenues.

The basic guide for such decisions is that the full employment surplus should not be affected by shifts in the autonomous strength of private demand and in monetary policy; yet it should take into account secular and structural changes in the economy. Any long-term changes in the composition of demand between corporate and noncorporate output, in the relative returns to capital and labor, and so on, should influence the estimate of full employment profits and the accompanying taxes. But shifts in aggregate private demand and accompanying cyclical changes in price-cost relationships and in productivity should not, in principle, affect the full employment estimate.

This guide provides a clear answer to the quantitatively important issue of handling the inventory valuation adjustment. Although capital gains on business inventories are excluded from the national income accountant's concept of profits, they are included to a large extent in the tax base, given the accounting systems used by most corporations. Although some small "normal" negative inventory valuation adjustment would accompany the upward price trend on a full employment path, the absolute size of the inventory valuation adjustment will be much larger than normal when prices are rising rapidly, thereby swelling the actual total of corporate profits taxes. Deviations from normal in the inventory valuation adjustment are primarily attributable to shifts in aggregate economic activity. Thus they should show up as part of the automatic stabilizing gap between actual and full employment federal revenues. And they do when the full employment estimate of corporate tax revenues reflects the normal—rather than actual—level of the inventory valuation adjustment. That is the appropriate treatment of the windfall in corporate tax revenues resulting from rapidly rising prices.

The basic guide also suggests the proper handling of another troublesome feature of corporate profit behavior. It is empirically true that the level of profits depends on the rate of increase of GNP as well as on its level and its relation to potential. Corporate costs lag behind revenues

both when activity rises sharply and when it turns sluggish; thus any major change of pace in the demand for corporate product has a much bigger impact on corporate profits immediately than after a couple of quarters.

The calculation of full employment revenues should be based on an estimated full employment level of profits that abstracts from this influence of spurts and sags in economic activity. It should express what the level of corporate profits would be at full employment if the economy had been traveling along a full employment path for at least a couple of quarters. The difference between actual and full employment revenues will then depend on the current and very recent speed of economic advance as well as on the size of the gap between actual and potential GNP. This is quite satisfactory. Automatic fiscal stabilization does depend on the speed—as well as the level—of the economy. If profits drop when the economy slows down, the resulting dent in actual revenues reflects the automatic operation of the tax system to bolster a sagging trend of economic activity.

The working of these elements could be seen in 1969. Although actual and potential output were essentially identical, corporate profits (including the inventory valuation adjustment) for this year of slow real growth amounted to only 9.5 percent of GNP, about 1 percentage point below the typical estimate of the normal full employment ratio. Although this dent in profits depressed actual revenues, the totals of full employment and actual revenues were nearly identical (abstracting from the price adjustment set forth above). The main offsetting factor was the very large (negative) size of the inventory valuation adjustment, which contributed an extra $1½ billion to actual revenues. Another offset came from extra personal and social security taxes, reflecting the fact that individuals received the incomes that corporations did not get.

This serendipitous situation has developed before. As Levy showed,[16] the "surplus gap"—that is, the calculated full employment surplus minus the actual surplus—has generally borne a close relationship to the gap between potential and actual GNP. Indeed, Knowles used that approach in his 1961 study.[17] Instead of estimating revenues for full employment levels of income, he calculated a marginal federal fiscal coefficient that was to be multiplied by the GNP gap to give a measure of the surplus gap.

16. Michael E. Levy, *Fiscal Policy, Cycles and Growth* (National Industrial Conference Board, 1963), pp. 23–24.

17. Knowles, "Staff Memorandum on the Relationship of the Federal Budget to Unemployment and to Economic Growth."

Some modest variation in the coefficient is called for when tax rates change, but such an adjustment presents no major problem. The surplus gap technique is a handy computational shortcut. But if an abnormally large inventory valuation adjustment and a large rate-of-change influence on profits (or an unusual magnitude of capital gains on long-term assets) reinforced —rather than offset—each other, the surplus gap computation could differ significantly from estimates based on levels. And the latter is conceptually superior.

The cost of exercising that preference, however, is the task of estimating full employment profits. For the period 1955–61, it was quite satisfactory to apply a simple rule that allocated to full employment profits before taxes 11¼ percent of potential GNP. Beginning in 1962, the proportion was lowered to 10⅔ percent to adjust for the depreciation reform of that year. Since 1962, this ratio might translate into about 10.4 percent for profits in the national income sense, including the "normal" negative inventory valuation adjustment at high employment. With output rising rapidly and exceeding potential during most of 1968, the actual share of profits (including the inventory valuation adjustment) would have been expected to exceed 10.4 percent. But it did not. And, in 1969, as noted above, it was only 9.5 percent. It is a major task, beyond the scope of this paper, to determine whether the latest readings reflect a structural long-run shift to a lower profits share at full employment. At this point, however, most of the dent can be tenably attributed to transitory factors. The relationship of costs to corporate revenues seems to be most seriously affected by the slowdown in productivity—which may well be temporary—rather than by any unusual movement of hourly labor compensation in relation to prices, which might have longer-run implications. Nor does the capital goods boom explain the rises in costs; corporate capital consumption allowances have not risen as a share of corporate gross product in recent years.

One recent development in the structure of corporate costs will, however, have continuing implications, even if the economy moves back to full employment promptly. That is the shift in net interest payments by the corporate sector. Until recent years, financial and nonfinancial corporations, taken as a group, were net lenders to the noncorporate economy. Between 1955 and 1965, the net interest received by the corporate sector and reflected in corporate profits varied between $2 billion and $3 billion a year or between 0.3 and 0.5 percent of potential GNP. Since 1965, corporations have moved steadily into a net debtor position, and, in 1969,

they *paid* $1.6 billion in net interest. Clearly a shift by corporations to debt financing through borrowing from the noncorporate sector should be reflected in relatively lower profits, as the result of higher interest payments. The trend is a reflection of aggregate demand and monetary policy, but it is bound to be long lived, unlike the productivity slowdown. This shift of about one-half of 1 percent of GNP could reasonably be built into the estimate of full employment profits for the late sixties and early seventies.

Omitting transitory influences on corporate profits from the calculation of the full employment surplus does not rule them out of consideration in the formulation of fiscal policy. If, because of transitory or cyclical factors, especially high or low profits in any year are foreseeable, a more or less restrictive policy may be in order. A shift away from profits will add to total after-tax private incomes because of the higher marginal tax rate applied to corporate profits. The differential in tax rates would then result in an expansionary influence on aggregate demand, even if the marginal propensities to spend out of corporate after-tax income and out of personal disposable income were identical. But the differential in tax rates is not the only reason that fiscal policy might need to take account of the distribution of income between the corporate and noncorporate sector. Since dividends move sluggishly and investment does not respond dramatically to moderate changes in profits after tax, the marginal propensity to spend out of corporate income may be appreciably lower in the short run than the marginal propensity to spend out of personal disposable income. For that reason alone, a redistribution of income away from corporations would tend to have a net expansionary effect even if tax rates on the two types of income were identical. If such a shift is predictable, then the consequences for aggregate demand should be recognized in the formulation of stabilization policy. Here is another consideration relevant to fiscal policy that cannot be appropriately reflected in the full employment surplus—any more than it can reflect a strong plant and equipment survey or a weak survey of consumer buying intentions and attitudes.

The Estimates

Table 2 shows estimates of full employment revenues, expenditures, and surplus from mid-1955 through 1969. Expenditures are adjusted for that portion of unemployment compensation benefits attributable to departures

from an unemployment rate of 4 percent. The actual surplus is shown for comparison with the full employment surplus. Also, to facilitate appropriate comparisons over considerable periods of time, the full employment surplus is shown as a percentage of potential GNP. The basic technique for these calculations has been set forth previously.[18] The profit share is taken as 10⅔ percent of GNP from 1962 to the present and 11.2 percent prior to the reform of depreciation guidelines in 1962. These calculations do not incorporate the adjustments set forth above for price inflation or for the shift in corporate financial structure.

The profile of fiscal policy over the past decade and a half as described by this table might be briefly summarized as follows:

The full employment surplus rose to a little more than 1 percent of potential GNP during 1956. If, however, the figures for 1956 and the first half of 1957 were adjusted for price acceleration, the surplus as a percentage of GNP would remain on a plateau from mid-1955 through mid-1957.

Fiscal policy actually tightened a bit during the 1957–58 recession, but then moved significantly in the direction of stimulus when the recovery began in the spring of 1958. The fiscal program was most expansionary at the end of 1958; it then moved sharply in the direction of restraint through 1959 and into the first half of 1960. Some relaxation of that restraint took place during 1961, but the full employment surplus was still about 2 percent of potential GNP. The low level of the full employment surplus shown in the first half of 1962 is partly the result of the retroactive accounting treatment of depreciation reform and the investment tax credit. In any case, the budget moved back to a more restrictive position in 1963.

As a result of the tax cut of early 1964, the full employment surplus declined sharply; but it headed upward later in the year and into the first half of 1965. At that point, the full employment surplus was back above 1 percent of GNP. The full employment budget then swung into deficit and remained deeply in the red during the Vietnam period until the enactment of the surcharge in 1968. Even during the second half of 1968, the full employment budget was still significantly in deficit. In 1969, the surplus was restored to about 1 percent of GNP.

From 1966 through 1969, the full employment surplus would be low-

18. Teeters, "Estimates of the Full-Employment Surplus."

Table 2. Full Employment Revenues, Expenditures, and Surplus, Third Quarter 1955 through Fourth Quarter 1969

Seasonally adjusted annual rates; dollar amounts in billions

Year and quarter	Personal taxes	Corporate taxes	Indirect taxes	Social security taxes	Total revenues	Total expenditures	Full employment surplus	Actual surplus	FES as percent of potential GNP
1955 3	$31.8	$19.4	$10.6	$ 9.5	$ 71.3	$ 68.3	$ 3.0	$ 5.0	0.7%
4	32.5	19.7	10.8	9.7	72.6	69.0	3.6	6.0	0.9
1956 1	33.2	20.0	11.0	10.3	74.5	69.3	5.2	6.3	1.3
2	33.9	20.4	11.2	10.5	76.0	71.8	4.2	5.5	1.0
3	34.8	20.8	11.5	10.7	77.9	72.3	5.6	4.9	1.3
4	35.6	21.2	11.7	10.9	79.4	74.1	5.3	6.0	1.2
Year	34.4	20.6	11.4	10.6	76.9	71.9	5.1	5.7	1.2
1957 1	36.3	21.6	12.0	12.3	82.2	78.1	4.1	4.3	0.9
2	37.1	21.9	12.2	12.5	83.7	79.7	4.0	2.5	0.9
3	37.9	22.3	12.4	12.7	85.3	79.4	5.9	2.6	1.3
4	38.6	22.6	12.6	12.9	86.7	79.8	6.9	−1.5	1.5
Year	37.5	22.1	12.3	12.6	84.5	79.3	5.2	2.1	1.1
1958 1	39.4	23.0	12.8	13.1	88.3	82.2	6.1	−8.1	1.3
2	40.1	23.3	12.9	13.3	89.6	86.1	3.5	−12.4	0.7
3	40.8	23.6	13.1	13.4	90.9	88.0	2.9	−10.8	0.6
4	41.5	23.9	12.7	13.6	91.8	91.2	0.6	−9.8	0.1
Year	40.5	23.5	12.9	13.4	90.1	86.9	3.3	−10.2	0.7
1959 1	42.2	24.3	12.9	15.5[a]	94.8	90.5	4.3	−4.2	0.9
2	42.9	24.6	13.0	15.6	96.1	89.6	6.5	0.8	1.3
3	43.6	24.9	13.2	15.8	97.5	90.2	7.3	−1.0	1.4
4	44.3	25.1	13.9	16.0	99.4	90.4	9.0	−0.6	1.7
Year	43.3	24.7	13.3	15.7	96.9	90.2	6.8	−1.2	1.3
1960 1	45.0	25.5	14.1	18.5	103.1	89.3	13.8	7.1	2.6
2	45.8	25.8	14.3	18.7	104.6	91.2	13.4	5.6	2.5
3	46.6	26.1	14.2	19.0	105.8	93.4	12.4	1.5	2.3
4	47.4	26.5	14.3	19.2	107.4	94.1	13.3	−0.6	2.4
Year	46.2	26.0	14.2	18.8	105.2	92.0	13.2	3.5	2.5
1961 1	48.1	26.8	14.5	19.4	108.8	97.0	11.8	−4.9	2.1
2	48.8	27.1	14.7	19.6	110.2	99.8	10.4	−4.5	1.9
3	49.4	27.3	14.8	19.8	111.4	101.5	9.9	−3.8	1.7
4	50.4	27.7	15.1	20.1	113.3	103.3	10.0	−1.9	1.7
Year	49.2	27.2	14.8	19.7	110.9	100.4	10.5	−3.8	1.9
1962 1	50.7	25.6[b]	15.1	21.6	113.0	107.7	5.3	−5.0	0.9
2	51.4	25.8	15.3	21.8	114.3	109.7	4.6	−4.5	0.8
3	52.2	26.1	15.5	22.0	115.7	109.1	6.6	−2.6	1.1
4	53.1	26.4	15.5	22.3	117.3	111.1	6.2	−3.2	1.0
Year	51.9	26.0	15.4	21.9	115.1	109.4	5.7	−3.8	1.0

1963	1	53.9	26.8	15.7	24.2	120.6	112.5	8.1	−2.4	1.3
	2	54.8	27.1	15.9	24.5	122.3	111.3	11.0	1.8	1.8
	3	55.6	27.4	16.1	24.7	123.8	113.4	10.4	1.2	1.7
	4	56.7	27.8	16.3	25.1	126.0	114.3	11.7	2.1	1.8
	Year	55.3	27.3	16.0	24.6	123.2	112.9	10.3	0.7	1.7
1964	1	52.7	27.0	16.5	25.4	121.7	117.1	4.6	−2.5	0.7
	2	48.0	27.4	16.7	25.7	117.8	117.9	−0.1	−6.3	0.0
	3	49.7	27.8	17.0	26.1	120.6	117.6	3.0	−2.7	0.5
	4	51.3	28.1	17.2	26.5	123.2	117.3	5.9	−0.6	0.9
	Year	50.4	27.6	16.9	25.9	120.8	117.5	3.3	−3.0	0.5
1965	1	54.4	27.4	17.5	26.9	126.1	118.3	7.8	4.4	1.2
	2	55.4	27.7	17.1	27.3	127.4	119.9	7.5	4.7	1.1
	3	53.7	28.1	15.8	27.6	125.1	126.3	−1.2	−3.1	−0.2
	4	54.3	28.5	16.0	28.0	126.7	128.5	−1.8	−1.1	−0.3
	Year	54.5	27.9	16.6	27.4	126.3	123.3	3.1	1.2	0.5
1966	1	56.9	29.0	14.8	32.1[a]	132.8	135.1	−2.3	1.4	−0.3
	2	60.5	29.5	15.5	32.7	138.3	138.5	−0.2	3.0	0.0
	3	62.1	30.1	15.4	33.4	140.9	146.6	−5.7	−1.2	−0.8
	4	64.2	30.6	15.6	34.0	144.4	151.2	−6.8	−4.1	−0.9
	Year	60.9	29.8	15.3	33.0	139.1	142.9	−3.7	−0.2	−0.5
1967	1	65.4	31.1	15.9	35.7	148.1	159.6	−11.5	−12.0	−1.5
	2	64.9	31.6	16.1	36.3	149.0	161.4	−12.4	−13.2	−1.6
	3	67.9	32.3	16.5	37.0	153.7	165.3	−11.6	−13.4	−1.5
	4	69.7	33.0	16.8	37.8	157.3	168.8	−11.5	−12.3	−1.4
	Year	67.0	32.0	16.3	36.7	152.0	163.8	−11.8	−12.7	−1.5
1968	1	71.2	37.2[b]	17.1	38.7[a]	164.3	174.2	−9.9	−8.4	−1.2
	2	73.6	38.0	17.5	39.5	168.6	180.5	−11.9	−9.5	−1.4
	3	82.2	38.7	17.8	40.3	179.1	184.4	−5.3	−2.8	−0.6
	4	85.8	39.5	18.2	41.1	184.6	187.8	−3.2	−0.1	−0.4
	Year	78.2	38.4	17.7	39.9	174.1	181.7	−7.6	−5.2	−0.9
1969	1	92.2	41.2	18.6	44.4	196.4	188.9	7.5	10.1	0.8
	2	95.2	42.2	19.0	45.4	201.7	189.6	12.1	13.5	1.3
	3	93.5	43.2	19.5	46.4	202.5	193.9	8.6	7.7	0.9
	4	96.5	44.1	19.9	47.4	207.9	197.0	10.9	6.7	1.1
	Year	94.4	42.7	19.2	45.9	202.1	192.4	9.8	9.5	1.0

Sources: Authors' estimates except for actual surplus figures, which are from *Survey of Current Business*, various issues, for third quarter 1955 through 1968 and from *Economic Indicators*, March 1970, for 1969. Figures are rounded and may not add to totals.

a. Reflects increases in wage ceiling.

b. Reflects retroactive changes in tax rates.

ered if the two adjustments set forth above—for inflation and corporate interest—were built into the estimate. Obviously, if these two revisions became accepted procedure, they would be directly incorporated into the estimates of full employment revenues rather than handled as separate adjustments. As adjusted in Table 3, the full employment surplus under-

Table 3. Full Employment Surplus Adjusted for Inflation and Shift in Corporate Financial Structure, First Quarter 1966 through Fourth Quarter 1969

Dollar amounts in billions of current dollars

Year and quarter	Adjustment for inflation		Corporate financial structure		Adjusted full employment surplus[e]
	Normal prices minus actual prices as percent of actual[a]	Adjustment to full employment revenue for inflation[b]	Shift in corporate interest[c]	Adjustment to full employment revenue for shift in interest[d]	
1966 1	0.11%	$+0.1	$0.8	$−0.2	$−2.4
2	−0.60	−0.8	1.0	−0.3	−1.3
3	−1.56	−2.2	1.4	−0.4	−8.3
4	−1.54	−2.2	1.8	−0.5	−9.5
Year	−0.90	−1.3	1.2	−0.3	−5.3
1967 1	−0.72	−1.1	2.0	−0.5	−13.1
2	−0.01	0.0	2.2	−0.6	−13.0
3	−0.35	−0.5	2.8	−0.8	−12.9
4	−0.85	−1.3	3.0	−0.8	−13.6
Year	−0.48	−0.7	2.5	−0.7	−13.2
1968 1	−1.25	−2.1	3.4	−1.0	−13.0
2	−1.82	−3.1	3.6	−1.1	−16.1
3	−0.94	−1.7	3.9	−1.1	−8.1
4	−0.75	−1.4	4.0	−1.2	−5.7
Year	−1.19	−2.1	3.8	−1.1	−10.8
1969 1	−1.39	−2.7	4.2	−1.2	3.6
2	−1.51	−3.0	4.4	−1.3	7.8
3	−1.87	−3.8	4.5	−1.3	3.5
4	−1.83	−3.8	4.7	−1.4	5.7
Year	−1.65	−3.3	4.4	−1.3	5.2

a. Computed from quarterly formula for price adjustment (see p. 95).
b. Column 1 applied to full employment revenues as shown in Table 2. (Proportionality of revenues to price level is assumed for simplification.)
c. Difference between actual corporate payments of net interest and −0.3 percent potential GNP (the 1965 level of interest). Actual net interest is from *Survey of Current Business*, various issues.
d. Excess of tax rate on corporate income over tax rate on personal income (which ranges from 25 to 30 percent) applied to column 3.
e. Sum of columns 2 and 4 and full employment surplus in Table 2.

lines the fact that fiscal policy remained unusually expansionary even after enactment of the surcharge in the second half of 1968. It also records the 1969 fiscal position as somewhat less restrictive than does the unadjusted full employment surplus.

A Forward Look at Fiscal Impact

The 1971 budget program set forth by the administration in February projected surpluses in the federal sector of the national accounts amounting to $3.6 billion in fiscal 1970 and $1.6 billion in fiscal 1971. The economic forecast underlying that budget assumes that real GNP will grow less rapidly than potential from fiscal 1970 to fiscal 1971 and that its level will be below potential output throughout fiscal 1971.[19] To evaluate the fiscal impact of the 1971 budget, it is necessary to consider the surpluses that would emerge if the economy moved along the potential path instead of dropping below it.

A movement toward smaller actual surpluses has already occurred, with the rate of nearly $12 billion in the first half of calendar 1969 tapering down to $7 billion in the second half. The administration's estimates for the fiscal 1970 totals implied that the actual surplus would be in the neighborhood of zero for the first half of calendar 1970, extending the marked downward trend of the second half of 1969.[20]

The Federal Reserve Bank of St. Louis has presented estimates for the second half of calendar 1970 intended to be consistent with the administration's program; these place actual revenues and expenditures essentially on a plateau during the two halves of the year. The budget is expected to edge into deficit in the second half. In that event, a return to a moderate rate of actual surplus—roughly approaching $5 billion—would be implied for the first half of calendar 1971, to be consistent with the published estimates for the whole of fiscal 1971.

Table 4 records estimates of the full employment budget by half-year intervals over the recent and prospective period. The projected expenditure figures are based on the St. Louis Bank's half-yearly phasing of out-

19. *The Economic Report of the President together with the Annual Report of the Council of Economic Advisers, 1970,* p. 85.

20. Official revisions of budget estimates released in May imply a significant deficit in the federal sector of the national accounts for both halves of calendar 1970.

Table 4. Federal Fiscal Impact, by Selected Periods, 1969–71

Seasonally adjusted annual rates in billions of dollars

Description	Calendar years							Fiscal years	
	1969		1970		1971				
	First half	Second half	First half	Second half	First half	1969	1970	1970	1971
Full employment revenues									
Basic revenues[a]	178.3	186.5	194.3	202.5	210.9	182.3	198.5	190.5	206.7
Surcharge	14.2	12.0	5.4	1.2	0	13.1	3.3	8.7	0.6
Tax reform and relief	0.5	0.5	3.7	1.9	−0.5	0.5	2.8	2.1	0.7
Social security taxes	5.7	5.8	6.1	6.4	12.4[b]	5.8	6.2	5.9	8.4[b]
Other	0.4	0.4	0.4	1.1	1.1	0.4	0.7	0.4	1.1
Total revenues	199.1	205.2	209.9	213.1	223.9	202.1	211.5	207.6	217.5
Full employment expenditures									
Actual expenditures	188.9	195.2	201.3	202.0	205.6	192.0	201.6	198.2	203.8
Unemployment compensation adjustment	0.3	0.3	−0.2	−0.3	−0.4	0.3	−0.2	*	−0.3
Total expenditures	189.2	195.5	201.1	201.7	205.2	192.3	201.4	198.2	203.5
Full employment surplus	9.9	9.7	8.8	11.4	18.7[b]	9.8	10.1	9.4	14.0[b]
Addenda									
Price adjustment	−2.9	−3.8	−2.3	−0.9	−1.2	−3.4	−1.6	−3.1	−1.0
Corporate financial adjustment	−1.3	−1.3	−1.4	−1.5	−1.6	−1.3	−1.4	−1.4	−1.6
Adjusted full employment surplus	5.7	4.6	5.1	9.0	15.9[b]	5.1	7.1	4.9	11.4[b]

Source: Authors' estimates.

a. Tax rates of 1967.

b. The first half of 1971 shows the $2½ billion increase at seasonally adjusted annual rates from the rise in the social security wage ceiling; the fiscal year total includes only $200 million for the effect of the change.

* Less than $0.05 billion.

lays; the projected "actuals" are adjusted downward slightly to allow for induced unemployment compensation benefits associated with an unemployment rate a little above 4 percent.

Full employment revenues are based on an estimate of money potential GNP intended to be consistent with the CEA projection of price developments. The GNP deflator rises at annual rates of 4.2 percent in the first half of 1970 and 3.7 percent in the second half. This path would yield the 4.3 percent year-to-year increase in the deflator projected by CEA. A further slowdown to an annual rate of 3.3 percent is built into the estimate for the first half of 1971.

The important impact on full employment revenues of recent changes in tax laws is shown separately in the calculation of full employment revenues.[21] These tax changes markedly reduce the growth of full employment revenues during 1970. Nevertheless, because expenditures grow so little, the sum of expansionary fiscal actions—tax cuts and rises in outlays combined—is close to the fiscal dividend of $16 billion during 1970.[22] Although the full employment surplus moves down a little in the first half and up somewhat in the second, it does not stray far from a $10 billion level, about 1 percent of potential GNP. Compared with the record since mid-1955, this represents a slightly above average degree of fiscal braking.

For the first half of 1971, however, the full employment surplus rises markedly. The big difference in this period comes from the sharp reversal in the impact of tax changes. Instead of absorbing a major share of the fiscal dividend as previously, they now reinforce restraint, because of the rise in social security taxes. Part of that tax increase (about $2½ billion

21. See the discussion in Charles A. Waite and Joseph C. Wakefield, "Federal Programs for Fiscal 1971," *Survey of Current Business,* Vol. 50 (February 1970), pp. 12–18.

22. Revised official estimates of the fiscal 1971 budget, released on May 19, would raise the annual rate of expenditures in the second half of 1970 by approximately $4½ billion above the estimates in the budget document. This is partially offset by a $1.6 billion increase in revenues from a proposed tax on lead used in the manufacture of gasoline. The full employment surplus, therefore, would be approximately $3 billion (annual rate) lower in the second half of 1970 than is shown in Table 4. In the first half of 1971, expenditures would be approximately $3½ billion larger than shown in the table; but this increase is more than offset by the continuing added revenue from the proposed gasoline tax and the temporary increase in revenues ($3.0 billion at annual rates) resulting from the proposal to accelerate collections of estate and gift taxes. Thus the full employment surplus for the first half of calendar 1971 shown in the table remains approximately correct in light of the May 19 revision.

at annual rates) is a rise in the maximum ceiling of the payroll base; for most wage earners that portion will have merely a "seasonally adjusted" impact on take-home pay during the first half of calendar 1971.[23] Even allowing for this factor, fiscal restraint clearly increases in that period.

Table 4 also shows the full employment surplus adjusted for inflation and for the shift in corporate financial structure in the manner described above. The adjustments lower the indicated level of the full employment surplus throughout; by this standard, 1970 (like 1969) should be characterized as a year of *about* average (rather than *above* average) fiscal restraint by comparison with the adjusted record since mid-1955. The price adjustment has an interesting effect on the profile during the period. As inflation becomes less intense on the projected path, the adjustment for automatic anti-inflationary fiscal stabilization properly shrinks. Hence, the increase in fiscal restraint from the first to the second half of calendar 1970 is larger according to the adjusted measure than to the unadjusted one.

With either measure, these are the two key conclusions: (1) For calendar 1970, the President's budget program involves no significant change in fiscal restraint from that of calendar 1969; by historical standards, it is at least of average restrictiveness. (2) The fiscal program is markedly more restrictive in the first half of calendar 1971 than in 1969–70 and also considerably more restrictive than average historical experience.

Different verdicts have been delivered on the basis of other benchmarks of fiscal policy. This fact demonstrates both the usefulness of a well-defined measure of fiscal impact and the need for professional dialogue to standardize the procedure for deriving such a measure.

23. That is why the full employment surplus for fiscal year 1971 is $1 billion less than the average of the seasonally adjusted annual rates for the two half-year periods.

Comments and Discussion

Warren Smith: I have always been skeptical about the usefulness of the full employment surplus and this paper, together with some recent applications of the concept, particularly in the Andersen and Jordan study, has rekindled my skepticism.

The purpose of the full employment surplus calculation is supposedly to provide one summary number that gives us a crude estimate of the impact of the budget on the economy without confusing it with the impact of the economy on the budget. The change in the full employment surplus from one period to the next is supposed to do this, but I submit it really doesn't do it. To illustrate my point, let us suppose that federal expenditures increased by $2 billion from one quarter to the next and let us suppose further that there are no changes in tax rates. As a result of the growth of the full employment GNP, full employment tax revenues rise by, say, $4 billion between the two quarters. In my book, discretionary fiscal policy has in fact been expansionary in this period to the extent of $2 billion, but the full employment surplus calculation will show the surplus as increasing by $2 billion.

The full employment surplus tells us the amount by which gross private investment (including net exports) has to exceed gross saving (including state and local surpluses) at full employment if we are in fact going to achieve full employment. If we are on the full employment path to begin with, the change in the full employment surplus from one period to the next tells us how much this balance of saving and investment must change if we are to stay on the path. If we are not on the path to begin with, it does

not even tell us this much. Indeed, I can't see that it discloses anything that is especially relevant to current economic policy.

I think it is important to have some readily understandable measure of the impact of discretionary fiscal policy. My suggestion is simpler than the full employment surplus. What I would propose is that we begin calculating the (a) discretionary increases in government spending minus (b) changes in tax revenues (evaluated at the current level of income) resulting from changes in the tax laws.

This approach gets around some of the difficulties that arise in the paper, but not all of them. The problems of weighting and timing remain. It does get around the problem of adjusting the full employment surplus for unacceptable price increases. It also gets around the difficulty of projecting the division of income between personal income and corporate profits at full employment. In my view, the result would be a far better measure of the current thrust of fiscal policy than the change in the full employment surplus.

R. A. Gordon: I have only a few difficulties and many agreements with the paper. The weights that have been selected to adjust expenditures, transfer payments, and taxes are obviously arbitrary but they seem to me to be on the whole of the right order of magnitude. I certainly agree with the conclusion of not incorporating a weighting system.

The section on timing leads me to comment that there is a difference between the implications of a given full employment surplus in a single year, including lag effects, and the implications of holding a steady full employment surplus over a long period. This points to the desirability of further analysis of this familiar problem—the difference between the effects you get in one year in a dynamic situation and the effects you get over a series of years in a more or less steady-state situation.

The price section of the paper gives me the most trouble by far. We simply do not know what rate of price increase to associate with full employment, and it is almost certainly different for merely one year, as opposed to a succession of years, of full employment. The use of 2 percent is regrettable, because the figure is obviously wrong in its implications. If you have to pick a figure, pick a bigger and more realistic one.

I would also emphasize the difference between ex post and ex ante estimates of the inflation adjustment. It is hopeless to go back over a twenty-year period and adjust full employment surplus estimates by some conjec-

ture of what the rate of price increase would have been at full employment in that period. In terms of estimates for the past, one could be talking about two different kinds of worlds. One might ask what the budgetary surplus or deficit would have been had full employment existed continuously over the whole past period. Or one could focus on the real world. The real world is one of ups and downs with occasional years of something close to full employment. That real world is completely different from the hypothetical world in which full employment exists continually. So, for ex post estimates, I strongly urge using actual prices.

The chief job from the point of view of policy is making the ex ante estimate for a year or two ahead. For a year ahead I do not like the formula that is proposed because it makes no differentiation between situations where we fall below full employment and situations where we stay above full employment and thus have continued excess demand. I am certain there is a basic asymmetry here which is not reflected in the proposed formula. For ex ante estimates, some ad hoc method of forecasting the rate of price change should be devised on the basis of whatever information is available.

Arthur Okun: To make clear what Warren Smith's alternative means, let's review the arithmetic of the full employment surplus. It is easiest to compare his measure of stimulus with the *decrease* in the full employment surplus. The latter is the change in expenditures (adjusted for unemployment compensation) minus increases in tax revenues due to changes in the law (evaluated at the full employment level), minus the normal growth in revenues from an economy moving along the full employment path.

Warren Smith's suggested measure of fiscal thrust is to take the expenditure increase—as in the full employment surplus—minus revenues from tax rate changes evaluated at *current* levels of economic activity. So one difference between his measure and the full employment surplus is that tax changes are evaluated at the actual level instead of at full employment. But quantitatively that difference is almost certainly trivial. Suppose you take a situation much like 1964—a tax cut that would be $10 billion at full employment. But suppose we have a 5 percent gap below potential GNP; suppose even that the tax cut has a high revenue elasticity—say, 1.5. Then the tax cut evaluated at actual GNP would be only 7.5 percent smaller—$9¼ billion instead of $10 billion. The main reason for preferring to evaluate it at a constant utilization rate is for consistency of the time series

so that you can make comparisons over more than one period of time. I cannot get excited about that either way and I don't think anybody should.

What I can get substantially concerned about is the second feature of Warren Smith's recommendation—the exclusion of normal revenue growth. As a result, his measure would characterize fiscal policy as expansionary nearly all the time. Even 1960 would not be a case of restrictive budgeting by this definition; it didn't actually push down money GNP. It is true that fiscal policy will help raise the level of money GNP from one year to the next, if expenditure growth exceeds increased revenue from tax rate changes. But that is not an interesting story. Constancy of GNP in a potentially growing economy is not a meaningful benchmark. The gap between actual and potential GNP *is* an interesting benchmark. The change in the full employment surplus answers a good question: Is fiscal policy stimulating or restraining the economy relative to its potential growth? Of course, Warren Smith's measure is easier to construct and avoids problems. It is always easier to answer less relevant questions.

In answer to Aaron Gordon's only significant criticism, the major reason for agreeing to a conventional price formula is to make our ex ante estimates of the full employment surplus independent of our beliefs about the actual path of economic activity. In using actual prices, the person with the more bullish economic forecast and associated greater rate of price increase ends up with a higher full employment surplus and, thus, a more restrictive appraisal of a given fiscal program than the person with more moderate price expectations. That is a curious result.

General Discussion

Paul Samuelson asked if the full employment surplus, as a result of price and other adjustments, became a suitable measure of fiscal impact for use in reduced-form equations such as those developed by Andersen and Jordan. Okun replied that he did not consider the reduced-form approach to be the best way to measure either fiscal or monetary impact, and that he doubted that any of the corrections discussed in the paper would make the full employment surplus a better single fiscal variable for reduced-form equations. If one insisted on a single fiscal measure to explain changes in GNP, Warren Smith's gross stimulus might be a better candidate. The full employment surplus, Okun emphasized, had not been designed for that

purpose and should not be redesigned for it. Charles Schultze agreed: "Most of us are not happy making policy with reduced-form relationships expressed in a single equation. Most of us use either an explicit or implicit model that is fairly complex."

Several participants supported the general position of the paper that "normal" growth in revenues should be taken into account in a measure of changes in fiscal policy. William Poole suggested that normal growth of revenues belongs in the calculation partly to achieve symmetry with the behavior of expenditures; much of the rise in federal expenditures is due to the growth of population and the economy, with the associated increase in the demand for government services. Both Robert Solow and Saul Hymans would allow for potential revenue growth, but both preferred estimates based on the continuation of existing utilization rates, rather than full employment. Solow argued: "A bonus from that procedure is ease of estimating. It keeps the estimates in the neighborhood of recent observations. Also, it may ease the price problem. You would have to forecast prices along a constant utilization path. But you no longer have to speculate about what the rate of inflation would be at full employment."

The authors pointed out that estimating normal revenue growth starting each interval from the existing utilization rate would produce a discontinuous time series, because potential revenue growth would then be estimated from a variety of starting points. Thus the estimates of revenue growth would vary depending upon the basic time interval chosen; an annual calculation would be different from one made over four quarters. The differences between estimating potential revenue growth from existing levels of utilization or at full employment are rarely large; the advantage of using a constant full employment path is that it produces consistency over time.

Many of the participants were not satisfied with the price adjustment formula proposed in the paper. Charles Schultze pointed out that the full employment surplus was primarily a pedagogical device to distinguish a shift in a function from a movement along a function. One part of the functional relationship—the one that yields potential GNP in real terms —has been accepted; but another part—the price behavior that accompanies potential GNP or excess demand—has not been accepted. He felt that the full employment surplus calculation might be based on the price projection resulting from a forecasting model that assumes activity to match full employment. Schultze concluded: "One alternative to the con-

ventional rule is simply to take the price and wage relationships that come out of your model at full employment and calculate your full employment surplus on that."

Hymans felt that the halfway-back rule for prices neglected the initial conditions and the way the economy was moving, and was thus too far removed from the factors determining actual price movements. George Jaszi pointed out that discussion of the effect of inflation on the full employment surplus had concentrated on the revenue side. He noted: "I think it is the way federal expenditures behave that causes the real trouble and not the behavior of taxes. I would offer the very vague suggestion or hypothesis that if one thought through this problem on the expenditure side, one might come up with a better answer than if one concentrated entirely on the revenue side."

Barry Bosworth saw, on the other hand, no basic objection to a convention, such as that in the paper, that incorporated inflation systematically after it occurred. But he felt that it underlined the dangers of using the full employment surplus for analytical purposes rather than for the pedagogical purposes it was intended to serve.

To Robert Hall, the problem in the treatment of prices was a reflection of the asymmetry of the income-expenditure theory, which underlies the full employment surplus. This theory really does not grapple with the behavior of the economy above full employment, and therefore the concept of the full employment surplus ought to be reserved for conditions of less than full employment. It was a useful concept in explaining developments in the early 1960s, but it cannot guide anti-inflationary policy, Hall contended.

Michael Levy and Saul Hymans both noted the need for better estimates of the changes in revenue due to structural changes in tax laws. Levy would use such estimates to approach the measurement of fiscal impact differently. He would develop equations to separate the effects on revenues (with a given tax system) of cyclical fluctuations in the rates of utilization, of the long-term growth of potential output, and of prices.

In closing, Okun stressed the current importance of the measurement of fiscal impact. The fiscal 1971 program of the budget document is not stimulative. It is important to recognize the workings of the automatic stabilizers in an economic slowdown and not to confuse the resulting shift to deficit with fiscal stimulus. The full employment surplus thus seems particularly illuminating now.