

Estimates of the High-Employment Budget and Changes in Potential Output

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ONE of the more novel approaches to the problem of assessing the impact of the Federal budget on economic activity was the development of the concept of the high-employment budget. The purpose of this concept was to standardize the budget position on some high-employment norm and thereby remove the effect of variations in economic activity on the measured budget surplus or deficit. Proponents of the high-employment budget argue that estimation of the Federal budget at an assumed full-employment level of activity provides a better measure of the impact of the budget on the economy than the actual surplus or deficit (see Chart I).

Central to the calculation of the high-employment budget is the estimate of potential GNP — that rate of production consistent with “full” utilization of economic resources in “normal” times. In general, this definition is very imprecise, and several estimates have been developed by different analysts over the years.

Most recently — since 1973 — a controversy has developed as to the estimated impact of energy developments on the economy’s productive potential. If, as has been argued, the run-up in energy prices has affected potential output, estimates of the high-employment budget must be adjusted accordingly. A measure of fiscal action that is not revised in accord-

ance with the revision of potential GNP will provide misleading information as to the stance of fiscal policy.

With regard to the current status of estimates of potential output, a consensus has not evolved. On the one hand, the 1977 Annual Report of the Council of Economic Advisers presented one set of revised estimates, based primarily on a reevaluation of recent productivity trends and a redefinition of the “full-employment unemployment rate.”¹ On the other hand, a series for potential output was recently discussed in this *Review* which incorporated the effects of energy developments since 1973.²

Two new estimates of the high-employment budget are presented here and compared with previous estimates. Most of the differences between the new and the old estimates occur after 1973. The differences are of such magnitude that the implications for fiscal policy are somewhat different with the increase in the relative price of energy and its associated effects on potential output.

¹*The Annual Report of the Council of Economic Advisers* (Washington, D.C.: U.S. Government Printing Office, 1977), pp. 45-57. For discussion of this series, along with a presentation of two other estimates of potential output, see George L. Perry, “Potential Output and Productivity,” *Brookings Papers in Economic Activity*, 1 (1977), pp. 11-60.

²Robert H. Rasche and John A. Tatom, “Energy Resources and Potential GNP,” this *Review* (June 1977), pp. 10-24.

DEVELOPMENT AND USE OF HIGH-EMPLOYMENT BUDGET

Although the concept of high-employment budgeting has been in existence since the 1940s, it did not gain prominence in government policymaking until the early 1960s.³ Since then, reliance on the concept has waxed and waned with the tides of economic and political developments. From 1966 to 1969, for example, the concept received little attention in fiscal policy discussions because with the economy operating at a high level of employment, measured budget surpluses and deficits approximated their high-employment values. Since 1969 the concept has been kept before the public but has not been assigned a key role in the formulation of budget policy.⁴

One reason that the high-employment budget has not been cast in a focal role in the fiscal policy process is that it is a hypothetical budget. Since it is an analytical tool designed by economists, its usefulness hinges on an understanding of certain elements of economic theory. Policymakers and the general public are understandably suspicious of a hypothetical figure based on theory that is not generally understood.

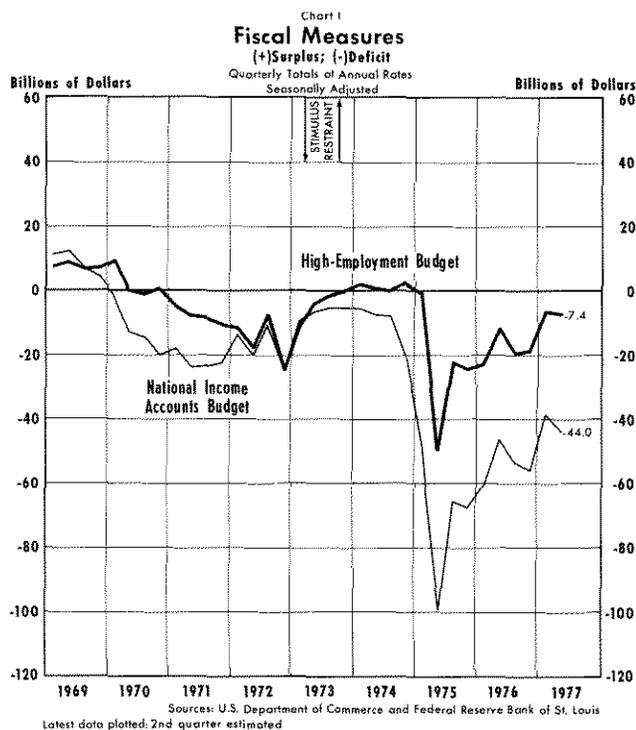
Another reason the high-employment budget has not become generally popular among policymakers is that there is no official time series available from the Federal government. Without the perspective provided by a continuous time series, it is difficult to interpret any particular estimate. Until such a series is prepared and published by an official Government agency, it is doubtful that the concept will receive general acceptance either by policymakers or the public.⁵

Several years ago, in an attempt to fill this void in the Government's data set, the Federal Reserve Bank

³For a discussion of the development of the high-employment budget concept, see Herbert Stein, *The Fiscal Revolution in America* (Chicago: University of Chicago Press, 1969), pp. 185-196, 220-240. For an update, see Alan S. Blinder and Robert M. Solow, "Analytical Foundations of Fiscal Policy," in *The Economics of Public Finance* (Washington, D.C.: The Brookings Institution), pp. 3-115.

⁴The closest the high-employment budget came to being accepted on an official basis was in the fiscal 1972 budget, published in January 1971. Here, for the first time, tables were published in the budget document relating to the "full-employment budget margin," and a rationale for fiscal policy was discussed within this framework.

⁵Still another reason that the concept has not been generally accepted is that economists themselves cannot agree (typically) on its usefulness and significance. See Blinder and Solow.



of St. Louis began publishing a series on the high-employment budget.⁶ This was done for purposes of providing a series that could be used to provide perspective whenever the concept was used. The assumptions required to prepare these estimates are somewhat arbitrary, but the measurement procedures have remained consistent over time. The alternative estimates which have been made by critics of this series have not been followed up in the form of regular updating and publication.⁷

RATIONALE FOR HIGH-EMPLOYMENT BUDGET

Initially, the rationale for the high-employment budget was developed within the framework of a simple Keynesian model of national income determination.⁸ This model is one that is still in general use in the macroeconomic section of introductory economics textbooks. The essence of the theory is that the level of economic activity is determined by the saving and spending propensities of economic units. When

⁶Keith M. Carlson, "Estimates of the High-Employment Budget: 1947-1967," this *Review* (June 1967), pp. 6-14.

⁷See the references in Blinder and Solow.

⁸For discussion within the context of this simple model, plus additional refinements, see Blinder and Solow.

viewed in conjunction with the saving-spending plans of private economic units, the high-employment budget provided a means of estimating what was required by way of fiscal stimulus or restraint to achieve full employment.

The usefulness of the high-employment budget does not rest with the Keynesian model of national income determination. Theoretical developments have occurred in recent years which have modified the interpretation of the high-employment budget but have not negated its use as an analytical tool. In particular, recognition of the interaction between monetary and fiscal actions has led to some considerations that were neglected in earlier discussions.

Identifying Active vs. Passive Elements in Budget

Originally, the purpose of the high-employment budget was to provide a measure of the impact of fiscal action that was superior to the actual surplus or deficit. Economists have been aware of the problems of interpreting the Federal budget position for many years. The reason for difficulty in interpretation is that actual surpluses or deficits contain both active and passive components.⁹ The active aspect of the budget refers to the effect of discretionary actions, that is, the effect of changing tax rates and expenditure programs. The passive component is the automatic response of expenditures and/or receipts to variations in economic activity. With tax rates and unemployment insurance programs as set by Congress, different levels of economic activity will yield different amounts of receipts and expenditures.

The high-employment budget does, in principle, provide a measure of the active part of the budget. However, problems in the method of estimation remain, as the active vs. passive classification is not that clearcut or automatically identifiable. For example, on a high-employment basis tax receipts tend to increase from one period to the next because the economy is growing. In addition, inflation causes receipts to rise even without a change in statutory rates.¹⁰ Conse-

⁹For further discussion using this terminology, see Keith Carlson, "The Federal Budget: Perspectives and Prospects," this *Review* (October 1976), pp. 2-7.

¹⁰This point is discussed at some length in Arthur M. Okun and Nancy H. Teeters, "The Full Employment Surplus Revisited," *Brookings Papers on Economic Activity*, 1 (1970), pp. 90-96. See also Nancy Ammon Jianakoplos, "The Growing Link Between the Federal Government and State and Local Government Financing," this *Review* (May 1977), pp. 13-20.

quently, the high-employment budget might suggest active tightening in fiscal policy, when in fact the increase in the surplus might simply be a reflection of inflation, that is, *prior* stimulus.

Guiding Policy Decisions

Provision of a crude indicator of the direction of fiscal actions is an important purpose of the high-employment budget. In addition, there is a purpose implied by its connection with the underlying theoretical framework — to actively use this budget concept in the process of achieving economic goals.¹¹

One use of the high-employment budget for purposes of policy requires information on the values of planned saving and investment. Critics have suggested that this type of information is very difficult to develop.¹² Many economic models have been developed to explain the saving-investment process.¹³ However, with many different models available, and with each assigning a different role to fiscal actions, a particular high-employment budget number probably means something different to each model builder.

Another interpretation of the high-employment budget stresses the interaction between fiscal and monetary policies.¹⁴ According to this monetarist interpretation, fiscal actions have short-run effects on GNP, but over the longer run, unless accompanied by a change in the rate of monetary expansion, these fiscal effects will be negligible.¹⁵ In fact, the main value of the high-employment budget is that it pro-

¹¹Initially this purpose was associated with short-run "fine tuning," but more recently the emphasis seems to have shifted to the long run and the use of high-employment budgeting as a means of imposing fiscal discipline. This was the view in the President's fiscal 1972 budget message.

¹²See, for example, Warren L. Smith's comment in *Staff Papers and Other Materials Reviewed by the President's Commission on Budget Concepts* (Washington: U.S. Government Printing Office, October 1967), pp. 450-55.

¹³For a discussion of existing models of the U.S. Economy, see Lawrence R. Klein and Edwin Burmeister (eds.), *Econometric Model Performance* (Philadelphia: University of Pennsylvania Press, 1976).

¹⁴For a theoretical discussion of the interaction between monetary and fiscal policy, see Karl Brunner, "Inflation, Money and the Role of Fiscal Arrangements: An Analytic Framework for the Inflation Problem," in Mario Monti (editor), *The New Inflation and Monetary Policy* (New York: Macmillan, 1976), pp. 25-89.

¹⁵Probably the best known work demonstrating this "crowding-out effect" is Leonall C. Andersen and Jerry J. Jordan, "Monetary Fiscal Actions: A Test of their Relative Importance in Economic Stabilization," this *Review* (November 1968), pp. 11-24. For a recent update of this work showing that fiscal policy now has an effect on GNP, see Benjamin M. Friedman, "Even the St. Louis Model Now Believes in Fiscal Policy," *Journal of Money, Credit and Banking*, IX (May 1977), pp. 365-367.

vides information about the impact of fiscal actions on interest rates. It is this credit market effect that is crucial in determining the effect of fiscal actions on economic activity in the long-run. This credit market effect depends, in turn, on the strength of private credit demands.¹⁶

The response of the monetary authority to interest rate pressures is instrumental in the determination of long-run growth and inflation. If the monetary authority does not respond to interest rate pressure, an increase in the high-employment deficit in the presence of strong private credit demands indicates that the Federal government is bidding resources away from the private sector. And shifts in the mix of output between public and private sectors can affect the growth rate of potential output. If, on the other hand, upward interest rate pressures are resisted by the monetary authority, the money supply will increase, and eventually inflation will result.

CONSIDERATIONS UNDERLYING REVISED ESTIMATES

Once the procedures for estimating the high-employment budget were developed, the matter of updating was somewhat mechanical, requiring as the major input an estimate of potential GNP each quarter.¹⁷ The source for these estimates was the Council of Economic Advisers, which during the period from 1967 through 1976 usually indicated their estimate of the growth of potential GNP in their annual report.

Review of Procedure

The Federal sector of the national income accounts provides the basis for preparing estimates of what receipts and expenditures would be at high employment. The estimation procedure involves the following steps for high-employment receipts:

- (1) Defining a high-employment rate of production and calculating a high-employment level of GNP in nominal terms;
- (2) Estimating the major income shares of GNP at high employment, i.e. personal income, wages and salaries, and corporate profits;
- (3) Applying high-employment tax rates to the derived income components, which serve as proxies for actual tax bases.

¹⁶See Richard W. Lang, "The 1975-76 Federal Deficits and the Credit Market," this *Review* (January 1977), pp. 9-16.

¹⁷Nancy H. Teeters, "Estimates of the Full-Employment Surplus, 1955-1964," *Review of Economics and Statistics*, vol. 47 (August 1965), pp. 309-21.

For high-employment expenditures, the only adjustment that is made is for unemployment compensation. Unemployment benefits are calculated for the specified level of high-employment, and actual unemployment benefits are adjusted for deviations from the high-employment norm.

Revised Estimates and Changes in Potential Output

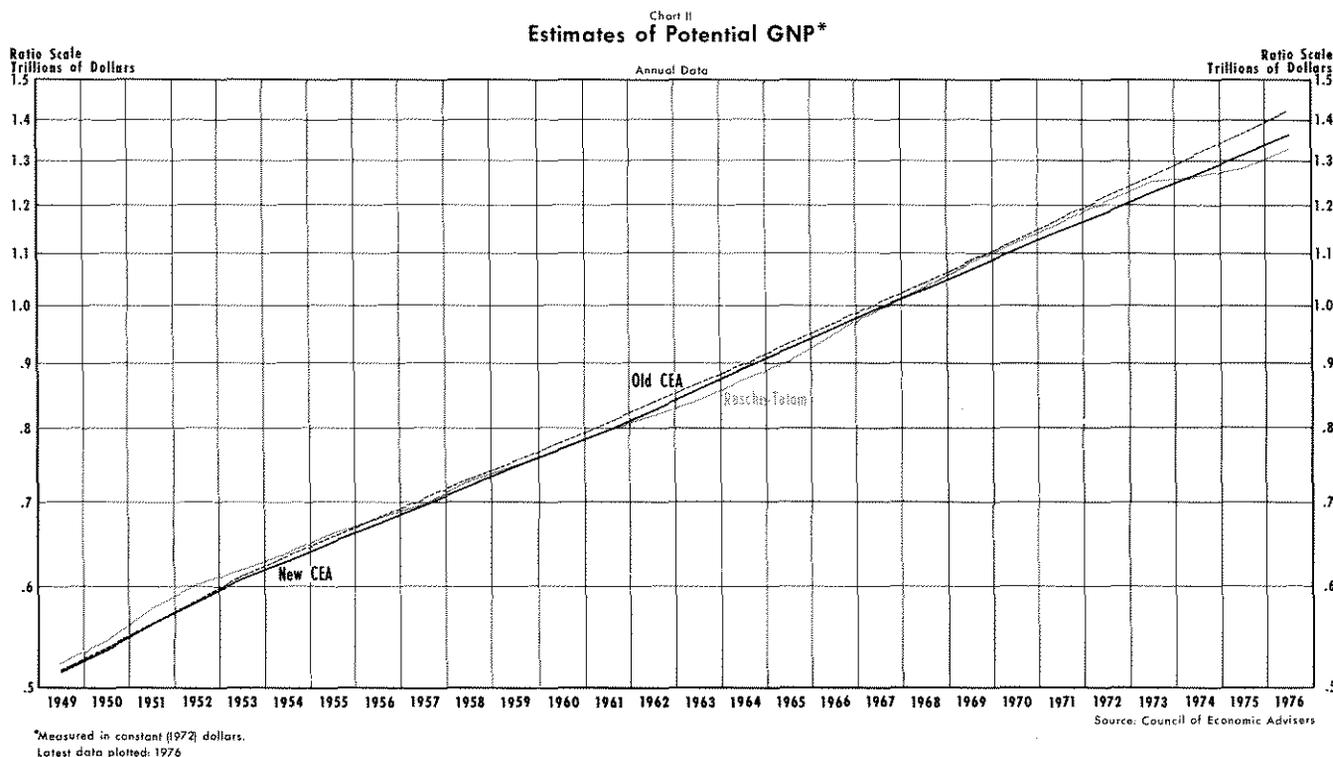
One of the reasons the high-employment budget came under attack in recent years was that it was calculated on the assumption that full employment was 96 percent of the labor force, that is, an unemployment rate of 4 percent. Changes in the composition of the labor force in recent years suggest that a 4 percent unemployment rate is no longer realistic as an estimate of the level of full employment.¹⁸ If these labor force developments are ignored, the policy interpretation of the high-employment measure could have undesirable economic consequences. If, say, a balance is sought in the budget on a high-employment basis of 4 percent unemployment, when in fact the "natural rate" of unemployment is 5 percent, budget policy will probably err on the stimulative side.¹⁹

To make the estimates of the high-employment budget more credible, two new series on potential GNP were used in the process of preparing the revised estimates. One new potential GNP series was prepared by the Council of Economic Advisers and is discussed in their 1977 Annual Report. The other was prepared by Robert Rasche and John Tatom and published in the June issue of this *Review*. For both series the estimates are supposedly consistent with a variable "full-employment unemployment rate." Instead of being a constant 4 percent, the level of unemployment which is deemed consistent with full employment now varies between 4 percent in 1955 and 4.9 percent in 1976.

The Rasche-Tatom series also allows for the effects of energy developments on productive potential. The argument is that energy is an input in the productive process, and a sharp unexpected increase in its relative price changed the optimal production mix. The effect

¹⁸Peter K. Clark, "A New Estimate of Potential GNP," Council of Economic Advisers, unpublished memorandum, January 27, 1977. Also, see Perry.

¹⁹The Council of Economic Advisers defines the natural rate (what they call full-employment rate) of unemployment as "the lowest rate of unemployment attainable, under the existing institutional structure, that will not result in accelerated inflation." *1977 Annual Report of Council of Economic Advisers*, p. 48.



was to reduce economic capacity below what it otherwise would have been from 1974 to present.

The two new potential GNP series are compared with the old CEA estimates in Chart II. The differences are quite small for 1947 through 1968, but then the series begin to diverge. By 1976, the difference between the old and the new CEA is \$68 billion (1972 dollars) and \$99 billion between the old CEA and the Rasche-Tatom series.

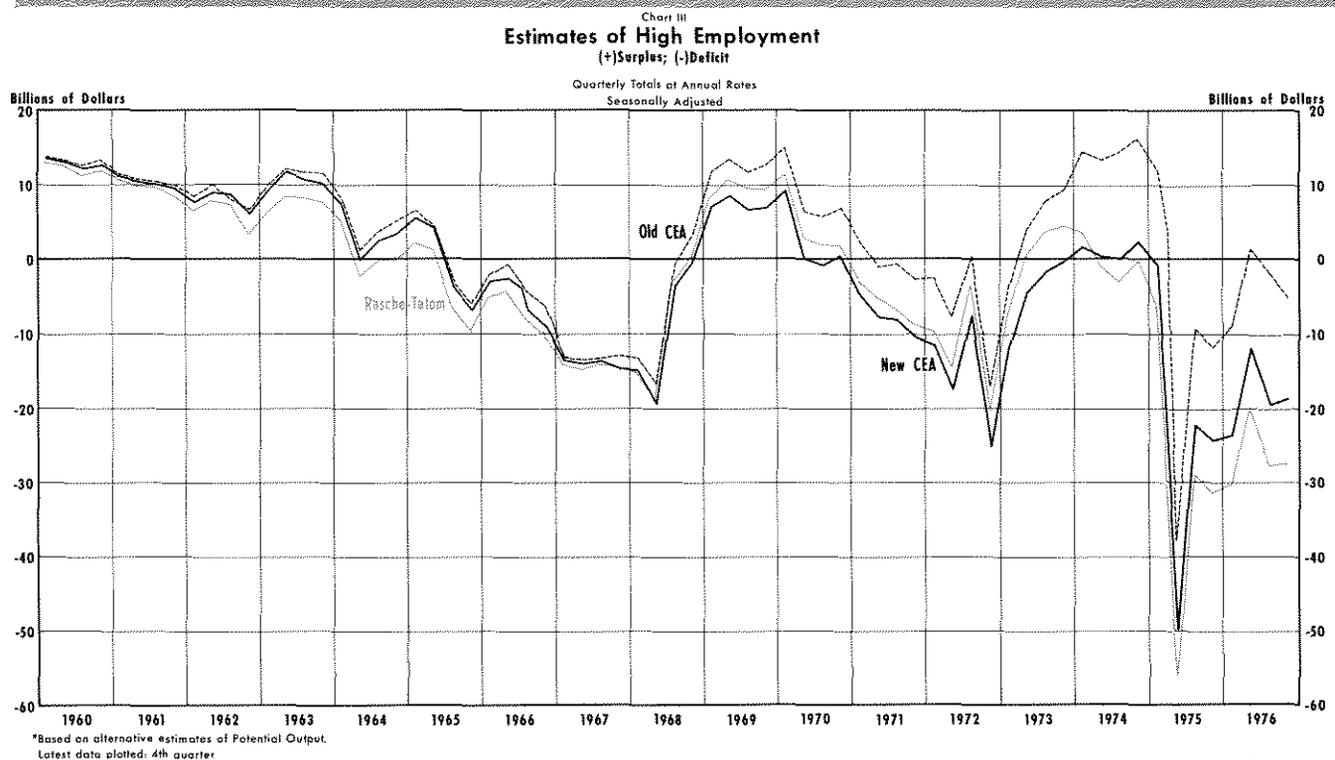
Other Sources of Revision

Although the new potential GNP series are the chief sources of the revision in the high-employment budget, there were other minor changes as well. The income share method is still used to derive proxies for the tax bases. The high-employment shares were re-examined along with the high-employment tax rates (ratio of collections to assumed bases). One of the more important changes was a change in the definition of the tax base proxy for personal taxes. Previously, personal income was used as a proxy, but with transfer payments growing in importance as a source of personal income in recent years, the proxy was changed to personal income minus Federal transfers to persons. This change facilitates the procedure of estimating high-employment personal taxes.

All other tax base proxies remained unchanged, except that they were recalculated for the new potential GNP series and the high-employment shares were reexamined. Wages and salaries are used as the base for social security taxes, corporate profits after taxes as the base for corporate taxes, and personal income as the base for indirect business taxes.

The effect of the revisions on high-employment receipts is shown in Chart III. The changes from the old series are quite small for 1947 to 1968, but after 1968 the differences become greater. By 1976, receipts are \$16 billion less for the new CEA series than for the old, and the Rasche-Tatom estimate is \$24 billion less than the old CEA estimate. The contours remain the same, however.

The revision also affected changes in high-employment expenditures since the assumed full-employment unemployment rate was raised. Only the unemployment benefit component of spending is treated as variant with the level of economic activity. Both of the new series show the same expenditures at high employment since they are both estimated on the basis of the same full-employment unemployment rate. The two sets of revised data are presented in Table I.



INTERPRETATION OF REVISED ESTIMATES

Examination of Chart III shows that both of the revised estimates of the high-employment budget are substantially less than those based on the old CEA series. All three series can be said to depict the same general pattern of movement throughout the 1952 to 1972 period. However, following 1972 the series show diverging movements.

The new series show that fiscal policy was becoming more stimulative from early 1970 through 1972. From late 1972 to early 1974, all series showed tightening, but the extent of tightening was greatest for the old CEA series. In 1974, there is some confusion as to the stance of fiscal policy depending on which series one is examining. The old CEA series showed moderate restriction, the new CEA series showed little change, but the Rasche-Tatom showed moderate stimulus. From late 1974 the pattern is similar, although the extent to which the high-employment budget has moved back toward surplus is least for the Rasche-Tatom series.

In terms of the impact of fiscal actions, 1976 is one of the more interesting years. The old CEA series indicates that fiscal actions were relatively restrictive in 1976, as indicated by a movement to balance late in the year. The two revised estimates, on the other

hand, show that the budget imparted substantial stimulus to economic activity in 1976 because these measures of the high-employment budget were substantially in deficit.

Some might argue that the status of fiscal action is such that economic growth is being stifled by continuing large deficits in the high-employment budget, as shown by the revised estimates. As long as monetary growth is quite moderate, the effect of large high-employment deficits is to usurp funds from the private sector, and to the extent that such funds would go to investment in plant and equipment, economic growth is slowed.

SUMMARY AND CONCLUSIONS

The high-employment budget, if viewed in the spirit in which it is constructed, can be a useful addition to the policymakers tool kit. Something as complex as the impact of fiscal actions cannot be summarized with a single number. It's chief purpose is to transfer some of the attention from the actual surplus or deficit. However, the high-employment budget serves its function best when used in conjunction with the measured surplus or deficit.

The effect of the recent revision of the series was to increase the deficit in recent years, reflecting a down-

Table I

ESTIMATES OF THE HIGH EMPLOYMENT BUDGET*

Billions of Dollars

Seasonally Adjusted at Annual Rates

	Based on Old CEA Potential GNP			Based on New CEA Potential GNP			Based on Rasche-Tatom Potential GNP		
	Receipts	Expenditures	Surplus/ Deficit	Receipts	Expenditures	Surplus/ Deficit	Receipts	Expenditures	Surplus/ Deficit
1972 I	\$231.6	\$234.0	\$- 2.4	\$223.3	\$234.8	\$-11.5	\$225.0	\$234.8	\$- 9.8
II	234.9	242.4	- 7.5	225.3	243.1	-17.8	228.4	243.1	-14.7
III	237.4	237.1	0.3	230.2	237.7	- 7.5	234.0	237.7	- 3.7
IV	242.0	259.0	-17.0	234.5	259.6	-25.1	239.0	259.6	-20.6
1973 I	257.1	260.9	- 3.8	249.6	261.6	-12.0	253.9	261.6	- 7.7
II	265.5	261.5	4.0	257.7	262.1	- 4.4	262.3	262.1	0.2
III	271.9	263.9	8.0	263.0	264.6	- 1.6	268.2	264.6	3.6
IV	280.2	270.7	9.5	271.2	271.5	- 0.3	275.8	271.5	4.3
1974 I	294.2	279.6	14.6	282.6	280.8	1.8	284.3	280.8	3.5
II	305.6	292.1	13.5	293.6	293.3	0.3	292.2	293.3	- 1.1
III	319.1	304.6	14.5	305.0	305.0	0.0	301.9	305.0	- 3.1
IV	331.0	314.8	16.2	316.5	314.1	2.4	313.4	314.1	- 0.7
1975 I	341.4	329.4	12.0	328.9	329.8	- 0.9	323.4	329.8	- 6.4
II	306.8	344.5	-37.7	296.5	346.2	-49.7	290.2	346.2	-56.0
III	344.6	353.9	- 9.3	333.1	355.4	-22.3	326.3	355.4	-29.1
IV	355.0	366.6	-11.6	342.3	366.7	-24.4	335.0	366.7	-31.7
1976 I	363.2	371.9	- 8.7	349.5	372.5	-23.0	341.9	372.5	-30.6
II	373.0	371.6	1.4	358.2	370.2	-12.0	350.0	370.2	-20.2
III	382.2	383.9	- 1.7	365.4	385.0	-19.6	357.0	385.0	-28.0
IV	393.4	398.3	- 4.9	376.1	394.7	-18.6	367.0	394.7	-27.7
1977 I				392.2	398.7	- 6.5	381.9	398.7	-16.8
II				402.1	409.5	- 7.4	391.4	409.5	-18.1

*Data for years prior to 1972 are available on request from this Bank.

ward revision in the estimate of potential GNP. The use of the high-employment budget series as an indicator of fiscal action was little changed, but as a

policy tool for purposes of achieving full employment with relative price stability, its implications are somewhat different than before.

