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PAPER No. 1

THE ECONOMIC IMPACT OF ALTERNATIVE  
FISCAL POLICIES

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A STUDY

PREPARED FOR THE USE OF THE  
SUBCOMMITTEE ON FISCAL POLICY

OF THE

JOINT ECONOMIC COMMITTEE  
CONGRESS OF THE UNITED STATES



AUGUST 16, 1976

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## LETTERS OF TRANSMITTAL

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AUGUST 12, 1976.

*To the Members of the Joint Economic Committee:*

Transmitted herewith is a study entitled "The Economic Impact of Alternative Fiscal Policies." This study examines what might have happened in various historical periods had we followed a policy of balancing the budget or balancing the full-employment budget. It also examines the probable impact of another discretionary policy different from the one actually pursued.

The views expressed in the paper are exclusively those of the author and do not necessarily represent the views of the Joint Economic Committee, individual members thereof, or other members of its staff.

HUBERT H. HUMPHREY,  
*Chairman, Joint Economic Committee*

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AUGUST 11, 1976.

HON. HUBERT H. HUMPHREY,  
*Chairman, Joint Economic Committee,  
U.S. Congress, Washington, D.C.*

DEAR MR. CHAIRMAN: Transmitted herewith is a study entitled "The Economic Impact of Alternative Fiscal Policies." This study was prepared for the Subcommittee on Fiscal Policy by L. Douglas Lee of the committee staff. It forms a part of the subcommittee's continuing effort to analyze the appropriate role of fiscal policy in our economy.

This study examines the probable impact of three alternative fiscal policies: Balancing the actual budget, balancing the full-employment budget, and a discretionary policy different from that actually pursued. The study examines three different historical periods and in general it concludes that no single fiscal policy rule is appropriate under all economic conditions. The study concludes that in almost all cases intelligent use of discretionary fiscal policy is superior to blind adherence to the balanced budget rule or the balanced full-employment budget rule.

The views expressed in this paper are those of the author and do not necessarily represent the views of the committee, its individual members, or other members of the committee staff.

RICHARD BOLLING,  
*Chairman, Subcommittee on Fiscal Policy*

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AUGUST 9, 1976.

HON. RICHARD BOLLING,  
*Chairman, Subcommittee on Fiscal Policy, Joint Economic Committee,  
U.S. Congress, Washington, D.C.*

DEAR MR. CHAIRMAN: Transmitted herewith is a study entitled "The Economic Impact of Alternative Fiscal Policies." The purpose

of this study was to examine the probable impact of pursuing two often-discussed fiscal policy rules—balancing the budget and balancing the full-employment budget. At the same time a third more discretionary policy was simulated. These experiments were run over three historical time periods representing different phases of the business cycle.

The study reaches the following basic conclusions: (1) Over most of the period from 1965 to 1974 balancing the budget would have been a very poor policy to follow. It would have meant substantial losses in output and increases in unemployment with little if any improvement in inflation. (2) Balancing the full employment budget over this period offers some improvement over balancing the actual budget, but it is no panacea. Over much of this period the full employment budget was close to balanced, so that bringing it into complete balance would have had little impact—either positive or negative—on economic performance. (3) In almost all cases discretionary policy proved superior to blind adherence to either of the fiscal policy “rules.” In some cases the experimental discretionary policy was significantly better than the policy actually pursued.

This study was prepared by L. Douglas Lee of the committee staff in consultation with other members of the Joint Economic Committee staff and F. Gerard Adams and Vijaya G. Duggal of Wharton Econometric Forecasting Associates, Inc. The econometric simulations on which this paper is based were prepared by Drs. Adams and Duggal in consultation with the committee staff. Administrative and secretarial work was done by Beverly Park of the committee staff.

The views expressed in the paper are those of its author and do not necessarily represent the views of the committee, its individual members, or other members of the committee staff.

JOHN R. STARK,  
*Executive Director, Joint Economic Committee.*

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# THE ECONOMIC IMPACT OF ALTERNATIVE FISCAL POLICIES

By L. Douglas Lee

## SUMMARY AND CONCLUSIONS

More than 5 years have passed since the American economy produced at its full potential. For most of these years we have also been plagued by increasing prices. Many explanations have been advanced for the causes of these problems, but the ones most often heard by Congress relate to the Federal budget. Some people argue that the Government's chronic deficits are at the root of our economic problems. These people propose a relatively straightforward solution: Balance the Federal budget.<sup>1</sup>

Others argue that the problem is not the deficit per se, but rather excessive stimulus or restraint at an inopportune time. They suggest calculating the revenues and expenditures which would result from operating the economy at full employment and using the change in this full-employment balance as a guide for determining the appropriate level of the actual deficit. A variant of this argument appeared several years ago when President Nixon suggested that expenditures should never be allowed to outrun the revenues that the tax system would generate at reasonably full employment.<sup>2</sup> More recent studies of our long-term capital needs have suggested that by spending less than full-employment revenues, the Government could encourage saving and capital formation.<sup>3</sup>

This paper looks back in history and tries to determine what might have happened if we had followed two fiscal policy rules: First, balancing the actual budget, and second, balancing the full-employment budget. Three time periods were examined: Mid-1965 to mid-1969, a period of substantial economic growth; mid-1969 to mid-1972, which spans an economic trough where growth fell sharply then rose sharply; mid-1972 to mid-1974, which covers a peak with real growth first rising rapidly then turning negative. Several tax and expenditure changes were used in each case to achieve the desired balance.

After examining the fiscal policy rules, a third, discretionary policy was tried. This policy was different in each case, but the object was to experiment with some combination of fiscal and monetary policy which economists might have regarded as reasonable at the time.

<sup>1</sup> For example, see "Controversy Over Proposed Mandatory Balancing of the Federal Budget," *Congressional Digest*, March 1976.

<sup>2</sup> "The U.S. Budget in Brief, Fiscal Year 1972," p. 6.

<sup>3</sup> See, for example, *Capital Needs in the Seventies*, Barry Bosworth, James S. Duesenberry, and Andrew S. Carron, Brookings Institution, 1975.

Three basic conclusions emerge from this analysis:

(1) Over most of the period from 1965 to 1974 balancing the budget would have been a very poor policy to follow. It would have meant substantial losses in output and increases in unemployment with little, if any, improvement in inflation.

(2) Balancing the full-employment budget over this period offers some improvements over balancing the actual budget, but it is no panacea. Over much of this period the full-employment budget was close to being balanced, so that bringing it into complete balance would have had little impact—either positive or negative—on economic performance.

(3) In almost all cases, discretionary policy proved superior to blind adherence to either of the fiscal policy rules. In some cases the experimental discretionary policy was significantly better than the policy actually pursued.

## PRESIDENTIAL BUDGET CONCEPTS, 1970-76

The poor performance of the U.S. economy in recent years has generated renewed interest in different fiscal policy rules. Changing views of the two most frequently discussed rules—balancing the actual budget and balancing the full-employment budget—can be traced through successive presidential statements.

In July 1970, President Nixon set forth the budget policy of his administration:

At times the economic situation permits—even calls for—a budget deficit. There is one basic guideline for the budget, however, which we should never violate: Except in emergency conditions, expenditures must never be allowed to outrun the revenues that the tax system would produce at reasonably full employment. When the Federal Government's spending actions over an extended period push outlays sharply higher, increased tax rates or inflation inevitably follow.<sup>1</sup>

The following January, the President declared that "the 1972 budget has a historic identity of its own . . . it adopts the idea of a 'full-employment budget,' in which spending does not exceed the revenues the economy could generate under the existing tax system at a time of full employment. \* \* \* The full-employment budget idea is in the nature of a self-fulfilling prophecy: by operating as if we were at full employment, we will help to bring about that full-employment."<sup>2</sup>

The full-employment budget rule was continued in the 1973 and 1974 budgets. When the President presented his fiscal year 1974 budget he was able to state the following:

From 1971 through 1973, the full-employment budget principle permitted and called for substantial actual budget deficits. For this reason, some people have forgotten the crucial point that the full employment principle requires that deficits be reduced as the economy approaches full employment—and that it establishes the essential discipline of an upper limit on spending at all times. \* \* \*

As we look ahead, with the economy on the upswing, the full-employment budget principle—and common sense—prescribe a shift away from fiscal stimulus and toward smaller budget deficits. We must do what is necessary to make this shift."<sup>3</sup>

Accordingly, the 1974 budget document shows a full-employment budget surplus moving in the direction of restraint from 1972 to 1975. Over this period the full-employment budget was projected to move from a \$4.9 billion deficit to a \$2.0 billion surplus.

The discussion about shifting "away from fiscal stimulus and toward smaller budget deficits" introduces the idea that the level of the full-employment deficit is not the only relevant consideration. It suggests that changes in the deficit from one year to the next are also important. The full-employment calculation by definition separates the changes in the surplus or deficit caused by cyclical fluctuations from changes caused by other forces. Some economists would argue that these changes are the most useful measure of fiscal impact; they show whether the Federal Government is using its discretionary

<sup>1</sup> "The U.S. Budget in Brief, Fiscal Year 1972," p. 6.

<sup>2</sup> "The Budget of the U.S. Government, Fiscal Year 1972."

<sup>3</sup> "The Budget of the U.S. Government, Fiscal Year 1974."



policy<sup>4</sup> to provide more or less stimulus to the economy relative to the preceding period.<sup>5</sup> Thus over the 1972 to 1975 period when the surplus was estimated to move steadily in the positive direction, fiscal policy would be characterized as restrictive throughout.

By January of 1974 when the 1975 budget was presented, the administration was beginning to retreat from the idea that the full-employment budget is "a self-fulfilling prophecy." Rather than recommending spending as if we were at full employment, the President proposed a restrictive fiscal policy in the form of an increasing full-employment surplus. This policy, characterized as "moderate restraint," was justified as being consistent with the goal of slowing down the growth of demand to help check inflation. The rising full-employment surplus was also dismissed as being "the result of the high inflation rate experienced in calendar year 1973 and expected to continue for the first half of 1974."<sup>6</sup>

Throughout 1974 there was much discussion about whether the full-employment budget concept remained useful, and whether the 4-percent criterion for full employment should be revised. In testimony before the Joint Economic Committee that year, the Council of Economic Advisers submitted a detailed statement discussing the full-employment budget balance and showing estimates of this balance based on a number of different assumptions—different potential GNP series, with and without inflation adjustments, and with a variable unemployment rate.<sup>7</sup>

The slowdown in economic growth anticipated in the President's January 1974 budget message turned, with the help of restrictive fiscal and monetary policy, into a full-fledged recession. As a result, what had been projected as a modest deficit of \$9 billion turned into an actual deficit of almost \$43 billion. In February of 1975, President Ford's first budget proposed a deficit of almost \$53 billion for the coming fiscal year. In his commentary he stated:

I regret that my budget and tax proposals will mean bigger deficits temporarily, for I have always opposed deficits. We must recognize, however, that if the economic recovery does not begin soon, the Treasury will lose anticipated receipts and incur even larger deficits in the future.<sup>8</sup>

The words full-employment budget are nowhere mentioned in the President's 1976 budget message. In fact, one could easily infer that the President's first choice would have been a balanced budget, if this could have been achieved.

In the 1977 budget message, attention is shifted from deficits to other considerations. The deficit forecast for 1976 had grown from \$52 billion to \$76 billion, and the President's estimates for 1977—\$43 billion—was widely viewed as unrealistically low. The deficit references

<sup>4</sup> Calling changes in the full-employment budget "discretionary" is not totally accurate. Increases in the price level which are not wholly within policymakers' discretion can have a substantial impact on the full-employment budget.

<sup>5</sup> For example, the February 1971 "Economic Report of the President" states: "The absolute level of the full employment surplus or deficit is of limited significance for indicating how much restraint or stimulus the budget would exert on the economy if it followed the full employment path, or indeed for indicating which of these directions its influence would take. Changes in the full employment surplus from period to period are much more important indicators of how much fiscal policy is moving toward contraction or expansion. The fact that the full employment budget has a surplus does not imply that the budget is not having an expansionary impact on the economy; the effects may be expansionary if the surplus is declining. Similarly a budget with a deficit may be restrictive if the deficit is declining." (See p. 72.)

<sup>6</sup> "The Budget of the U.S. Government, Fiscal Year 1975."

<sup>7</sup> "The 1974 Economic Report of the President: Hearings before the Joint Economic Committee," Part 1.

<sup>8</sup> "The Budget of the U.S. Government, Fiscal Year 1976."

in the President's message can be summarized in two sentences: "The total size of the budget and the deficit or surplus that results can substantially affect the general health of our economy—in a good way or in a bad way. \* \* \* The combination of tax and spending changes I propose will set us on a course that not only leads to a balanced budget within 3 years, but also improves the prospects for the economy to stay on a growth path *that we can sustain.*"<sup>9</sup>

Thus from 1971 to 1977 the full-employment budget idea went full circle—from giving the budget a historic identity of its own to being practically ignored.<sup>10</sup>

During 1974 and 1975 we began to see a return to what was called the old-time religion of balanced budget policy. When the 1976 budget document was released, the Secretary of the Treasury, William Simon, was quoted as being "horrified" at the size of the deficit projected. Administration officials began to talk about the time when we could get back to a balanced budget, and the budget document contained long-range projections which showed the gap between outlays and receipts narrowing and being closed by 1979, with a budget surplus projected in 1980. This emphasis on balancing the budget has continued up to the present. Secretary Simon summarized a statement defending the President's tax and spending cut proposals made in the fall of 1975 by saying:

If we do act now, we can regain fiscal control and restore balance to the Federal budget which is required if we are to stabilize economic activity and provide the necessary environment for savings and investment in the future. . . . If we do not act now the disappointing record of economic instability and chronic general budget deficits will continue into the future.<sup>11</sup>

<sup>9</sup> "The Budget of the U.S. Government, Fiscal Year 1977."

<sup>10</sup> It would be misleading to say that the full-employment concept was totally ignored in the 1976 and 1977 budgets. The text of the documents, after the President's message, shows this calculation. Although the text does not characterize the fiscal policy implicit in these calculations, the projections show the full-employment surplus rising steadily from 1976 to 1981. The full-employment calculation is identified as an "analytical concept" whose purpose is unaffected by the level of unemployment used in the calculations provided that level remains fixed.

<sup>11</sup> Statement of Hon. William E. Simon, Secretary of the Treasury, before the Joint Economic Committee, Friday, Nov. 7, 1975.

## STUDY RESULTS

In view of this history of changing budget concepts, it seems useful to examine the two fiscal policy rules that have enjoyed some popularity in recent years—namely, balancing the full-employment budget, and balancing the actual budget. This experiment uses a macro-economic model to reproduce the actual course that the economy followed over three different periods of time—1965–69, 1969–72, and 1972–74.<sup>1</sup> After adjusting the model to reproduce what actually occurred, fiscal policy was changed to conform to one of the rules such as the balanced budget. This causes the model to produce the economic path which would have been likely had that fiscal policy actually been pursued.

In the case of the balanced actual and full-employment budgets, the assumption is made that monetary policy is substantially unchanged. In all probability, monetary policy would change in response to a substantially different fiscal policy, but no one knows by how much. Therefore, the assumption of no change is probably the best assumption that can be made in examining the effects of fiscal policy alone. This underscores the fact that fiscal and monetary policies do not work in isolation but should be used as complementary methods of influencing the course of the economy.

In each of the time periods three different methods of balancing the budget (actual and full employment) have been used: (1) Changing the personal income tax, (2) changing transfer payments to persons, and (3) changing government purchases of goods and services. In the case where purchases of goods and services are changed, they are split 33 percent to 67 percent between civilian and defense expenditures with half of that change being in wage payments.<sup>2</sup>

The following section contains a discussion of (1) the policy of balancing the actual budget, (2) the policy of balancing the full-employment budget, and (3) a policy which might, at the time, have been regarded as somewhat more appropriate than either of these or than the policy actually pursued.

### 1965–69

From mid-1965 to mid-1969, the United States enjoyed a period of substantial economic growth interrupted only temporarily by the mild recession of 1966–67. Throughout most of this period the rate of inflation and the unemployment rate were both under 4 percent. At the same time, the Federal Government ran a modest deficit.

Balancing the budget in a period of actual deficits necessarily means a reduction in expenditures or an increase in taxes. Accordingly, this policy would tend to curtail gross national product and raise the rate of unemployment. The simulations conform to this expectation throughout the 1965–69 period. The more interesting result is that

<sup>1</sup> Simulations were made using the Wharton Mark III Quarterly Model.

<sup>2</sup> Actual experience over the 1965–74 period was that defense purchases, while generally declining, averaged about 75 percent of total purchases; pay averaged about 44 percent of defense purchases and 47 percent of civilian purchases.

balancing the budget via a reduction in Government purchases of goods and services has a much greater effect on the economy than balancing it via a reduction in transfer payments or a personal income tax increase. As table 1<sup>3</sup> shows, balancing the budget in 1967 using tax increases or cuts in transfer payments would have reduced real GNP about \$10 billion in the last 2 years of the period. However, balancing it by reducing purchases of goods and services reduced real GNP by even more, especially in 1967 when the actual deficit was the largest of the period.

If the budget had been balanced from mid-1966 to mid-1967, real economic growth would have been between 1 and 3½ percentage points lower than actually occurred depending on the method by which the budget is balanced. The unemployment rate was only modestly higher using income taxes or transfer payments to balance the budget, but was raised by almost 3 percentage points in 1967-68 when purchases of goods and services were used to balance the budget. The reverse phenomenon can be seen at the end of this time period when the actual budget was in surplus. Balancing the budget by increasing purchases of goods and services has a much larger impact on real growth than balancing it through an increase in transfer payments or a reduction in personal income taxes.

On reflection, it is logical to expect a change in Government purchases to have a larger impact on the economy than a corresponding change in taxes or transfers. When personal taxes are reduced, for example, we would expect consumption to rise by less than the total tax cut because part of it would be saved. However, this model simulation shows economic impacts of changing purchases almost twice as large as those from changing personal taxes or transfer payments. The magnitude of this difference was surprising.

TABLE 1.—BALANCED BUDGET POLICIES (MID-1965 TO MID-1969)

	Mid-1965 to mid-1966	Mid-1966 to mid-1967	Mid-1967 to mid-1968	Mid-1968 to mid-1969
<b>Real GNP, billions of dollars (annual average):</b>				
Base solution.....	640.8	666.6	690.1	719.3
After changing:				
Purchases.....	639.9	656.3	664.2	713.8
Transfers.....	640.3	663.6	679.0	709.2
Taxes.....	640.2	663.2	678.4	711.4
<b>Percent change in real GNP (annual rate):</b>				
Base solution.....	6.1	2.8	4.9	2.5
After changing:				
Purchases.....	6.6	— .7	5.6	9.0
Transfers.....	6.1	1.5	4.3	4.0
Taxes.....	6.2	1.4	4.6	4.6
<b>Percent change in implicit price deflator (annual rate):</b>				
Base solution.....	3.1	3.0	4.2	4.8
After changing:				
Purchases.....	3.2	3.2	4.3	4.1
Transfers.....	3.2	3.3	4.5	4.6
Taxes.....	3.2	3.2	4.4	4.5
<b>Unemployment rate (percent, annual average):</b>				
Base solution.....	4.1	3.8	3.8	3.4
After changing:				
Purchases.....	4.1	5.2	6.7	4.1
Transfers.....	4.1	3.9	4.1	4.1
Taxes.....	4.1	3.9	4.3	4.1
<b>Housing starts (millions, annual average):</b>				
Base solution.....	1.4	1.1	1.4	1.6
After changing:				
Purchases.....	1.4	1.1	1.4	1.6
Transfers.....	1.4	1.1	1.3	1.5
Taxes.....	1.4	1.0	1.3	1.5

<sup>3</sup> For each table in the text there is a table in the appendix showing quarterly estimates and other pertinent information.

The reason for this larger difference is twofold: First is the initial impact on GNP caused by a sudden reduction in Government purchases. In the initial impact, a reduction in purchases directly reduces GNP and in its secondary impact, the lower GNP produces fewer tax receipts and thus necessitates another expenditure reduction to maintain the balance. This spiral effect means that the change in expenditures necessary for a balanced budget is much greater than the change in tax collections or transfer payments. The second reason for the large difference is the treatment of employment in the expenditure cut. As mentioned earlier, half of the expenditure cut is assumed to be a reduction in wage payments which translates directly into a lower level of employment.<sup>4</sup>

The full-employment experiment over the same period of time shows a similar pattern. (See table 2.) First, one should know that the full-employment surplus or deficit (shown in appendix table 2) was never very large, the greatest deficit being \$11½ billion and the greatest surplus being \$8½ billion. One would not expect changes of this magnitude to have large effects on the economy. This expectation is borne out when the full-employment budget is balanced using transfer payments or personal income taxes. Once again, however, when the full-employment budget was balanced by changing purchases of goods and services, the effect both on the unemployment rate and the rate of growth of real GNP was much greater. In the early part of this period reducing purchases produced a much lower growth rate than other policies and in the latter part increasing them to achieve balance in the full-employment budget produces a much higher growth rate. It is interesting to note that in this particular time period changing transfer payments or personal income taxes produce a more stable growth path than changing purchases.

The impact on the rate of inflation both in the balanced budget case and the balanced full-employment budget case appears to be very small. As noted in the paper, appendix B, prepared by Gerard Adams and Vijaya Duggal, the results in some cases seem to go in the opposite direction from what might first be expected. This is not an unusual result in econometric simulations and it results from the response of price to cyclical changes in productivity. When the economy is stimulated enough to increase economic growth, the improved productivity that normally accompanies increased growth offsets some of the price pressure from the increased demand which also accompanies the increased growth. The conclusion is that moderate variations in budget policy have little effect on the inflation rate.

In table 3 one can see the results of discretionary fiscal and monetary policies which might have been pursued from 1965 to mid-1969. These policies are not intended to produce the optimum growth path which hindsight might allow an experimenter to produce, but rather

<sup>4</sup> The current dollar change in expenditures should not be overexaggerated when compared with the tax and transfer change because the model is designed to respond to "real" or purchasing power changes. Since balancing the budget requires changing nominal dollars, a conversion is required. This is done by dividing the nominal dollar amount by the appropriate implicit price deflator. Consider the following example: In 1971, balancing the budget required a personal tax increase of \$27.3 billion or a cut in purchases of \$38.4 billion. However, if the tax increase is deflated by the personal consumption deflator and the purchases cut is deflated by the Federal purchases deflator, the changes in real purchasing power translate into \$20.3 billion for the tax change and \$24 billion for the purchase change. Part of the tax increase would come from reduced savings and part from reduced consumption. Therefore, the reduction in "real" consumption would probably be less than \$20 billion. The difference between the two policies is about \$4 billion in real purchasing power as compared to about \$11 billion in current dollars.

The argument for transfer payments is approximately the same as for taxes. However, since most transfer payments go to low income people who save little, one would expect transfer changes to have a slightly more powerful impact on the economy than an equivalent tax change.

to approximate a set of policies that might at that time have been regarded as reasonable by many economists.

Specifically, in the first simulation, personal income taxes were increased by \$5 billion in 1966, \$10 billion from the first quarter of 1967 to the second quarter of 1968 and \$12 billion from the third quarter of 1968 to the second quarter of 1972. An attempt was made to smooth out the rate of increase in the money supply and, especially, to avoid the large reductions in the rate of growth of the money supply that occurred in 1966 and 1967. These policies produced a slightly lower growth rate in the real gross national product and slightly higher average unemployment rate.

TABLE 2.—BALANCED FULL EMPLOYMENT BUDGET POLICIES (MID-1965 TO MID-1969)

	Mid-1965 to mid-1966	Mid-1966 to mid-1967	Mid-1967 to mid-1968	Mid-1968 to mid-1969
Real GNP, billions of 1958 dollars (annual average):				
Base solution.....	640.8	666.6	690.1	719.3
After changing:				
Purchases.....	642.1	658.8	679.1	718.6
Transfers.....	641.5	663.9	680.7	713.7
Taxes.....	641.7	663.4	682.5	714.4
Percent change in real GNP (annual rate):				
Base solution.....	6.1	2.8	4.9	2.5
After changing:				
Purchases.....	5.2	1.8	5.5	5.3
Transfers.....	5.9	2.0	4.7	3.5
Taxes.....	5.9	2.0	4.7	3.9
Percent change in implicit price deflator (annual rate):				
Base solution.....	3.1	3.0	4.2	4.8
After changing:				
Purchases.....	3.2	3.1	4.1	4.5
Transfers.....	3.2	3.2	4.3	4.6
Taxes.....	3.2	3.2	4.3	4.6
Unemployment rate (percent, annual average):				
Base solution.....	4.1	3.8	3.8	3.4
After changing:				
Purchases.....	3.8	4.8	5.1	3.7
Transfers.....	4.0	3.8	4.0	3.8
Taxes.....	4.0	3.9	4.1	3.9
Housing starts (millions, annual average):				
Base solution.....	1.4	1.1	1.5	1.6
After changing:				
Purchases.....	1.4	1.1	1.4	1.6
Transfers.....	1.4	1.1	1.4	1.5
Taxes.....	1.4	1.1	1.3	1.5

TABLE 3.—DISCRETIONARY POLICY (MID-1965 TO MID-1969)

	Mid-1965 to mid-1966	Mid-1966 to mid-1967	Mid-1967 to mid-1968	Mid-1968 to mid-1969
Real GNP, billions of 1958 dollars (annual average):				
Base solution.....	640.8	666.6	690.1	719.3
1st simulation.....	639.9	664.1	686.9	715.5
2d simulation.....	640.1	667.0	688.9	714.7
Percent change in real GNP (annual rate):				
Base solution.....	6.1	2.8	4.9	2.5
1st simulation.....	5.7	2.8	4.9	2.5
2d simulation.....	5.9	3.0	4.4	2.3
Percent change in implicit price deflator (annual rate):				
Base solution.....	3.1	3.0	4.2	4.8
1st simulation.....	3.2	3.2	4.3	5.0
2d simulation.....	3.2	3.1	4.5	5.0
Unemployment rate (percent, annual average):				
Base solution.....	4.1	3.8	3.8	3.4
1st simulation.....	4.1	3.8	3.8	3.5
2d simulation.....	4.1	3.8	3.6	3.4
Housing starts (millions, annual average):				
Base solution.....	1.4	1.1	1.4	1.6
1st simulation.....	1.4	1.1	1.4	1.5
2d simulation.....	1.4	1.2	1.4	1.5
Short-term interest rates (annual average):				
Base solution.....	4.8	5.5	5.5	6.5
1st simulation.....	4.8	5.2	4.8	5.7
2d simulation.....	4.5	5.1	5.1	5.7
Long-term interest rates (annual average):				
Base solution.....	4.9	5.5	6.3	6.8
1st simulation.....	4.9	5.5	6.1	6.3
2d simulation.....	4.9	5.3	6.1	6.4

In the second simulation an attempt was made to avoid some of the housing crunch of 1966. Instead of allowing the Federal Reserve's discount rate to rise to 4½ percent as actually occurred, it was maintained at 4 percent from the third quarter of 1965 to the first quarter of 1967. Other changes in tax and monetary policy made in the first simulation were also maintained. This second simulation produced 100,000 more housing starts in 1966 than the base solution, but had very little impact on other economic indicators.

In all cases the changes had little impact on the rate of inflation. Where the inflationary impact does appear to be significant, it can be attributed to the productivity loss associated with a tax increase and the resulting slowdown in economic growth. Contrary to normal expectations, restrictive fiscal policy tends to aggravate inflation. In no case are the changes very large.

### 1969-72

Turning to the second set of experiments—covering the period 1969:3 to 1972:2—one sees much larger impacts of different fiscal policy rules. In the early part of this period the economy was very sluggish with some periods of declining activity, and the last few quarters show growth rates substantially above our long-term trend. The rate of unemployment rose throughout the first half of this period, and then leveled off at just under 6 percent.

Table 4 indicates the disastrous consequences that would have resulted from a balanced budget policy. Instead of an unemployment rate rising from 3.6 percent to just under 6 percent and remaining steady at that level the unemployment rate would have risen throughout the entire period. If the budget had been balanced by changing purchases of goods and services, the unemployment rate might have been 4 percentage points higher than what was actually observed. If the balance had been achieved by changing personal income taxes or transfer payments, the resulting unemployment rate would have been about 1 percentage point higher than the base solution.

It is vital to note the behavior of inflation throughout this time period under the various balanced budget scenarios. There is little effect on inflation in the first year of the simulation period. In the second year, however, inflation averages 0.8-0.9 percentage points higher and in the third year it averages about 0.5 to 1.0 percentage points higher. Since excess demand pressures were nonexistent over most of this period, reducing output by balancing the budget does not have a favorable impact on inflation but rather an unfavorable one due to the slowdown in productivity that accompanies a lower growth rate or a decline in real output.

TABLE 4.—BALANCED BUDGET POLICIES (MID-1969 TO MID-1972)

	Mid-1969 to mid-1970	Mid-1970 to mid-1971	Mid-1971 to mid-1972
Real GNP, billions of 1958 dollars (annual average):			
Base solution.....	724.4	731.4	766.0
After changing:.....			
Purchases.....	725.8	705.2	724.4
Transfers.....	725.5	722.2	737.8
Taxes.....	725.5	720.5	741.8
Percent change in real GNP (annual rate):			
Base solution.....	- .3	2.8	7.0
After changing:.....			
Purchases.....	-3.5	.4	6.7
Transfers.....	-1.0	.9	5.6
Taxes.....	-1.2	.7	5.9
Percent change in implicit price deflator (annual rate):			
Base solution.....	5.1	4.6	3.1
After changing:.....			
Purchases.....	4.8	5.5	3.7
Transfers.....	5.1	5.4	4.2
Taxes.....	5.2	5.5	4.0
Unemployment rate (percent, annual average):			
Base solution.....	4.0	5.7	5.9
After changing:.....			
Purchases.....	4.0	8.5	9.7
Transfers.....	4.0	6.0	6.6
Taxes.....	4.0	6.1	6.9
Housing starts (millions, annual average):			
Base solution.....	1.3	1.8	2.4
After changing:.....			
Purchases.....	1.3	1.7	2.0
Transfers.....	1.3	1.7	2.0
Taxes.....	1.3	1.6	1.9

A special note is necessary to explain the treatment of price and wage controls in the period following August 15, 1971. Technically controls are handled by exogenous adjustments to the constant factors in the relevant model equations. This means that in the alternative simulations, controls are assumed to have exactly the same impact that they had in the base solution. Clearly, if controls had been applied differently with the alternative economic policies, the path followed by prices might have been different. Like monetary policy, however, the response of controls to different fiscal policies cannot be anticipated and therefore the constant assumption is most appropriate for examining the impact of alternative fiscal policies.

At first glance, the difference between the unemployment rate produced by changing purchases as opposed to changing taxes or transfers appears very large—about 3 percent in the last year of the period. The difference between the change in purchases and the change in personal taxes or transfers required to achieve a balanced budget is \$10 billion or less. However, one must remember that Government purchases of services included the labor services of Government employees. Therefore, a reduction in purchases of goods and services has the direct effect of reducing Government employment and thereby raising unemployment as well as the less direct, macroeconomic effect of reduced Government spending. An increase in taxes or a reduction in transfer payments has only the indirect macroeconomic impact on unemployment.



Another point worth noting is the size of the change necessary to balance the budget. For example, in 1971 the actual deficit averaged about \$22 billion. However, in order to balance the budget by raising income taxes we would have had to increase taxes by \$25 billion, to balance it by reducing transfer payments we would have had to reduce them about \$31 billion, and to balance it by reducing purchases of goods and services, would require a reduction in purchases of over \$38 billion. This illustrates the point that tax receipts will fall when the Government reduces its support to the economy. Lower spending reduces the deficit but lower tax receipts partially offset this initial effect.

Since the balanced budget scenario produced such undesirable results, turn to the alternative rule of balancing the full-employment budget. The result of this policy is illustrated in table 5. The first thing to know about this scenario is that for over half of the period, the full employment budget was very close to balanced. In the first three quarters of this period there was a full-employment surplus of about \$10 billion and in the last two quarters there was a full-employment deficit of \$6 to \$10 billion. For the quarters in between, the full employment budget was close to balanced. Accordingly, one would not expect a balanced full-employment budget policy to cause much larger changes than those which actually occurred over most of this period. This is exactly what the simulations show.

In the early part of this period, balancing the full-employment budget means increasing expenditures or decreasing receipts. Once again, a change in purchases of goods and services has a much larger impact than a change in transfers or taxes. When purchases of goods and services are increased by the \$10 billion required to balance the budget, the unemployment rate is reduced almost a full percentage point. Conversely, in the last two quarters of the period when purchases are reduced by the \$6 to \$10 billion necessary to balance the full-employment budget, the unemployment rate is increased about half a percentage point. Since the unemployment rate was between  $3\frac{1}{2}$  and 4 percent in late 1969 and early 1970, the policy of balancing the full employment budget drives it even lower. At the end of the period when the actual unemployment rate was between  $5\frac{1}{2}$  and 6 percent, and the full-employment budget was in deficit, balancing the full-employment budget drives the unemployment rate even higher. These changes become more obvious when the quarterly data shown in appendix table 5 is examined.

TABLE 5.—BALANCED FULL EMPLOYMENT BUDGET POLICIES (MID-1969 TO MID-1972)

	Mid-1969 to mid-1970	Mid-1970 to mid-1971	Mid-1971 to mid-1972
Real GNP, billions of 1958 dollars (annual average):			
Base solution.....	724.4	731.4	766.0
After changing:			
Purchases.....	731.7	734.4	763.1
Transfers.....	727.9	735.7	768.2
Taxes.....	728.8	735.7	767.2
Percent change in real GNP (annual rate):			
Base solution.....	-.3	2.8	7.0
After changing:			
Purchases.....	-.6	2.2	5.5
Transfers.....	.1	2.7	6.3
Taxes.....	0	2.6	6.1
Percent change in implicit price deflator (annual rate):			
Base solution.....	5.1	4.6	3.1
After changing:			
Purchases.....	4.9	4.7	3.5
Transfers.....	4.8	4.5	3.6
Taxes.....	4.8	4.5	3.7
Unemployment rate (percent, annual average):			
Base solution.....	4.0	5.7	5.9
After changing:			
Purchases.....	3.3	5.5	6.0
Transfers.....	4.0	5.6	5.6
Taxes.....	3.9	5.5	5.6
Housing starts (millions, annual average):			
Base solution.....	1.3	1.8	2.4
After changing:			
Purchases.....	1.3	1.8	2.4
Transfers.....	1.3	1.9	2.4
Taxes.....	1.4	1.9	2.4

This experiment suggests that balancing the full-employment budget under all circumstances can at times be destabilizing. Pursuing this policy in the late 1969-early 1970 period drives the unemployment rate below what is often regarded as a sustainable long-run level; pursuing it in the latter part of 1971 and early 1972 aggravates an already too high unemployment rate.

Table 5 also shows that from early 1970 to the end of 1971 when the full-employment budget was very close to being balanced, the unemployment rate was steadily rising. Since fiscal policy was fairly neutral (the change in the surplus from one period to the next was fairly small), the slowdown in the economy must be attributed to other forces.

With respect to inflation, the already mentioned productivity effects of changes in real output can again be observed. But the more interesting observation is the length of time necessary for increases in demand to be reflected in the rate of inflation. The unemployment rates generated by balancing the full-employment budget in the late 1969 and early 1970 period (a maximum of 1 percent less than the 4 percent in the base solution) reflects an economy with excess aggregate demand. However, there is no appreciable impact on the aggregate rate of inflation for at least 1 year. From mid-1970 to mid-1971, the inflation rate was roughly the same as the base solution, but during the last half of 1971 and early 1972, the GNP deflator averaged about one-half percentage point higher. This indicates that the maximum effect of the excess aggregate demand is a sustained higher rate of inflation in the second year after the conditions of excess demand existed. Again one must remember that these simulations assume no response from wage-price controls to the change in aggregate demand.

Turning to table 6, one can see what a more flexible fiscal policy, different from the two balanced budget rules, might have produced.

Declining economic activity in the early part of this period suggest that the very low unemployment rates could not be sustained for very long. Therefore, in order to stimulate economic growth and prevent the unemployment rate from rising as high as otherwise seemed likely, a tax reduction might have been appropriate. At the same time, given the relatively high rates of inflation and the slowly increasing money supply, some increase in monetary growth would be necessary to permit the tax reduction to stimulate the hoped-for increase in real output. Accordingly, the money supply might have been allowed to expand somewhat more rapidly.

In the line labeled "first simulation" in table 6, personal taxes were reduced by \$8 billion from the third quarter of 1969 to the third quarter of 1970. Thereafter, the personal tax reduction was slowly reduced until it became zero in the middle of 1971. The money supply was allowed to increase about 6½ percent as opposed to the 6 percent that actually occurred. In the line labeled "second simulation" taxes were reduced by \$10 billion throughout the entire period. Increases in the money supply were about 6.8 percent, although they followed a much smoother pattern in the second simulation than in either the base solution or the first simulation.

TABLE 6.—DISCRETIONARY POLICY (MID-1969 TO MID-1972)

	Mid-1969 to mid-1970	Mid-1970 to mid-1971	Mid-1971 to mid-1972
Real GNP, billions of 1958 dollars (annual average):			
Base solution.....	724.4	731.4	766.0
1st simulation.....	728.2	738.4	772.2
2d simulation.....	730.0	744.1	784.3
Percent change in real GNP (annual rate):			
Base solution.....	-.3	2.8	7.0
1st simulation.....	.3	2.8	6.8
2d simulation.....	.7	3.7	7.3
Percent change in implicit price deflator (annual rate):			
Base solution.....	5.1	4.6	3.1
1st simulation.....	4.8	4.3	3.5
2d simulation.....	4.7	4.0	3.4
Unemployment rate (percent, annual average):			
Base solution.....	4.0	5.7	5.9
1st simulation.....	4.0	5.5	5.4
2d simulation.....	3.9	5.2	4.8
Housing starts (millions, annual average):			
Base solution.....	1.3	1.8	2.3
1st simulation.....	1.4	1.9	2.3
2d simulation.....	1.4	2.0	2.4
Short-term interest rates (annual average):			
Base solution.....	8.5	5.9	4.9
1st simulation.....	8.5	6.0	4.8
2d simulation.....	8.3	5.7	4.6
Long-term interest rates (annual average):			
Base solution.....	8.0	8.3	7.8
1st simulation.....	8.0	8.3	7.8
2d simulation.....	8.0	8.1	7.6

The results of this particular policy are in many respects more attractive than the base solution and more attractive than what would have occurred under either of the balanced budget rules. Although the unemployment rate rises and falls in the same general pattern, the peak unemployment rate is 5.4 percent in the second simulation as compared with the 6 percent that actually occurred. Equally as important is that, instead of remaining near peak levels for 1½ years, the unemployment rate declined by about 1 percent during that time. The easier monetary policy is reflected also in lower interest rates and

higher levels of housing starts. The more stable economy produced by this policy also causes a more satisfactory performance of the rate of inflation.

## 1972-74

Turning to the last time period to be examined, the overall results are substantially the same as in previous time periods. From mid-1972 to mid-1974 the budget was very close to being balanced. As might be expected, balancing the budget in the first half of this time period when the actual deficit averaged over \$13 billion has a far greater impact on the economy than balancing it in the last half when the deficit averaged less than \$2 billion.

TABLE 7.—BALANCED BUDGET POLICIES (MID-1972 TO MID-1974)

	Mid-1972 to mid-1973	Mid-1973 to mid-1974
Real GNP, billions of 1958 dollars (annual average):		
Base solution.....	820.6	836.0
After changing:		
Purchases.....	804.9	826.9
Transfers.....	814.0	827.3
Taxes.....	813.1	828.1
Percent change in real GNP (annual rate):		
Base solution.....	5.4	-2.2
After changing:		
Purchases.....	5.0	-1.5
Transfers.....	4.5	-2.1
Taxes.....	4.5	-1.9
Percent change in implicit price deflator (annual rate):		
Base solution.....	6.3	10.1
After changing:		
Purchases.....	6.7	9.7
Transfers.....	6.8	10.2
Taxes.....	6.7	10.2
Unemployment rate (percent, annual average):		
Base solution.....	5.2	5.0
After changing:		
Purchases.....	6.7	5.7
Transfers.....	5.3	5.3
Taxes.....	5.4	5.3
Housing starts (millions, annual average):		
Base solution.....	2.4	1.7
After changing:		
Purchases.....	2.4	1.7
Transfers.....	2.4	1.6
Taxes.....	2.3	1.6

The timing of the budget deficits—large at the beginning of the period and small toward the end—means that a balanced budget policy would have caused a severe shock to the economy in late 1972, which would have gradually damped as time passed. For example, balancing the budget by reducing Government purchases would have raised the unemployment rate by about 1½ percent in late 1972 but by just over one-half percent in 1974.

The behavior of inflation is somewhat more interesting in this scenario than in the previous ones. The normal productivity effects are observed in the early parts of this period, and in the latter parts of the time period balancing the budget through tax and transfer payment changes has little effect. However, when the deficit is small enough that balancing the budget through reduced purchases has little impact on economic growth and productivity, there seems to be a modest, though significant, reduction in the overall rate of inflation. This is probably the result of the higher unemployment rate produced in the previous

year by balancing the budget. This tends to confirm the previous observation that the unemployment rate seems to influence the aggregate inflation rate after about a 1-year lag.

Table 8 illustrates the balanced full-employment budget scenario for mid-1972 to mid-1974. Throughout this period, fiscal policy became steadily more restrictive. The result was low rates of growth in 1973 and recession in 1974. Balancing the full-employment budget over this time period would have been a substantial improvement over the policy which was actually pursued. These simulations suggest that while balancing the full-employment budget would not have prevented the recession in 1974, it would have lessened the recession's severity. Economic growth would have been between one-half and 1 percentage point higher over the 2-year period, and unemployment would have been correspondingly lower. Further, it is quite likely that recovery would have begun much sooner under the balanced full-employment budget policy.

TABLE 8.—BALANCED FULL EMPLOYMENT BUDGET POLICY (MID-1972 TO MID-1974)

	Mid-1972 to mid-1973	Mid-1973 to mid-1974
Real GNP, billions of 1958 dollars (annual average):		
Base solution.....	820.6	836.0
After changing:		
Purchases.....	814.9	843.8
Transfers.....	817.5	837.0
Taxes.....	816.7	838.5
Percent change in real GNP (annual rate):		
Base solution.....	5.4	-2.2
After changing:		
Purchases.....	5.6	-2
Transfers.....	5.1	-1.0
Taxes.....	5.1	-6
Percent change in implicit price deflator (annual rate):		
Base solution.....	6.3	10.1
After changing:		
Purchases.....	6.6	10.2
Transfers.....	6.6	9.9
Taxes.....	6.5	9.8
Unemployment rate (percent, annual average):		
Base solution.....	5.2	5.0
After changing:		
Purchases.....	5.7	4.0
Transfers.....	5.2	5.0
Taxes.....	5.3	5.0
Housing starts (millions, annual average):		
Base solution.....	2.4	1.7
After changing:		
Purchases.....	2.4	1.6
Transfers.....	2.4	1.6
Taxes.....	2.3	1.7

Table 9 illustrates the results of a more flexible policy unfettered by the rule of a single principle. Federal transfer payments were increased beginning in the third quarter of 1972 by \$4 billion. These payments were gradually tapered off to zero in the third and fourth quarters of 1973 but increased again by \$2.5 billion in the first half of 1974. This is a rough estimate of the funds that might have been employed had a countercyclical grant program been in place. Personal income taxes were reduced by \$10 billion beginning in the second quarter of 1973, and the reduction was maintained through the end of the period. Federal nonmilitary spending was increased modestly—

\$5 billion by the end of the forecast horizon. Both of these measures were intended to provide general stimulus to counter the coming recession.<sup>5</sup> In the last few quarters of this period, the money supply was allowed to grow about 2 percent more rapidly than in the base solution to accommodate the hoped-for expansion in real output.

TABLE 9.—DISCRETIONARY POLICY (MID-1972 TO MID-1974)

	Mid-1972 to mid-1973	Mid-1973 to mid-1974
Real GNP, billions of 1958 dollars (annual average):		
Base solution.....	820.6	836.0
1st simulation.....	823.5	845.7
2d simulation.....	823.5	849.0
Percent change in real GNP (annual rate):		
Base solution.....	5.4	-2.2
1st simulation.....	6.0	-1.6
2d simulation.....	6.1	-1.6
Percent change in implicit price deflator (annual rate):		
Base solution.....	6.3	10.1
1st simulation.....	6.3	9.8
2d simulation.....	6.3	9.6
Unemployment rate (percent, annual average):		
Base solution.....	5.2	5.0
1st simulation.....	5.1	4.6
2d simulation.....	5.1	4.5
Housing starts (millions, annual average):		
Base solution.....	2.4	1.7
1st simulation.....	2.4	1.8
2d simulation.....	2.4	2.0
Short-term interest rates (annual average):		
Base solution.....	6.0	9.4
1st simulation.....	6.1	9.5
2d simulation.....	5.8	7.1
Long-term interest rates (annual average):		
Base solution.....	7.6	8.2
1st simulation.....	7.6	8.2
2d simulation.....	7.6	7.6

The results of this first simulation show a significantly stronger economy in the last part of 1973 and early 1974 with no ill effects in the form of increased inflation.

In the second simulation, an attempt was made to avert the housing slowdown even further by maintaining the Federal Reserve's discount rate at 5.1 percent from the first quarter of 1973 throughout the entire period instead of allowing it to rise to 7.9 percent as actually occurred. This causes the money supply to increase substantially faster in 1974 as shown in appendix table 9. The result is again a stronger economy with some improvements in housing starts.

<sup>5</sup> A \$10 billion tax reduction was recommended to Congress by the Joint Economic Committee in March 1974.

## CONCLUSIONS

After examining three different policies over different phases of the business cycle, three basic conclusions emerge:

(1) Over most of the period since 1965 balancing the actual budget would have been a very poor policy to follow. It would have meant substantial losses in output, and increases in unemployment with very little, if any, improvement in inflation.

(2) Balancing the full-employment budget offers some improvement over balancing the actual budget but it is no panacea and it is not a self-fulfilling prophecy. Over much of this period the full-employment budget was so close to balanced so that bringing it into complete balance would have had little impact—either positive or negative—on economic performance.

(3) In all cases examined, the “rule” of balancing the budget by reducing Federal purchases would have been inferior to the policy actually followed. In most cases, the policies pursued could have been improved, in some cases significantly. The experimental discretionary policy was significantly better than the policy actually pursued, and in two of the three cases produced the most desirable economic path.

Table 10 shows a comparison of the best and worst cases examined in this paper. This designation is sometimes arbitrary, and it is based on overall economic performance relative to sustainable long-run trends. In some years the difference is small, but in most of the period, a well-chosen discretionary fiscal policy can significantly improve overall economic performance.

TABLE 10.—COMPARISON OF BEST AND WORST CASES (MID-1965 TO MID-1974)

	Mid-1965 to mid-1966	Mid-1966 to mid-1967	Mid-1967 to mid-1968	Mid-1968 to mid-1969	Mid-1969 to mid-1970	Mid-1970 to mid-1971	Mid-1971 to mid-1972	Mid-1972 to mid-1973	Mid-1973 to mid-1974
<b>Real GNP, billions of 1958 dollars (annual average):</b>									
Best case.....	641.7	663.4	682.5	714.4	730.0	744.1	784.3	823.5	849.0
Worst case.....	639.9	656.3	664.2	713.8	725.8	705.2	724.4	804.9	826.9
<b>Percent change in real GNP (annual rate):</b>									
Best case.....	5.9	2.0	4.7	3.9	.7	3.7	7.3	6.1	-.6
Worst case.....	6.6	-.7	5.6	9.0	-3.5	-.4	6.7	5.0	-1.5
<b>Percent change in implicit price deflator (annual rate):</b>									
Best case.....	3.2	3.2	4.3	4.6	4.7	4.0	3.4	6.3	9.6
Worst case.....	3.2	3.2	4.3	4.1	4.8	5.5	3.7	6.7	9.7
<b>Unemployment rate (percent, annual average):</b>									
Best case.....	4.0	3.9	4.1	3.9	3.9	5.2	4.8	5.1	4.5
Worst case.....	4.1	5.2	6.7	4.1	4.0	8.5	9.7	6.7	5.7
<b>Housing starts (millions, annual average):</b>									
Best case.....	1.4	1.1	1.3	1.5	1.4	2.0	2.4	2.4	2.0
Worst case.....	1.4	1.1	1.4	1.6	1.3	1.7	2.0	2.4	1.7

Note: From mid-1965 to mid-1969, the best policy is judged to be balancing the full-employment budget via changes in taxes, the worst policy is balancing the actual budget via cuts in Government

purchases; from mid-1969 through mid-1974, the best policy is the second discretionary simulation, the worst policy is balancing the actual budget via cuts in Government purchases.



## APPENDIX A. APPENDIX TABLES

### APPENDIX TABLE 1.—BALANCED BUDGET POLICIES (1965:3-1969:2)

	1965:3	1965:4	1966:1	1966:2	1966:3	1966:4	1967:1	1967:2	1967:3	1967:4	1968:1	1968:2	1968:3	1968:4	1969:1	1969:2
<b>Real GNP, billions of 1958 dollars (annual rate):</b>																
Base solution .....	622.5	636.6	649.1	655.0	660.2	668.1	666.6	671.6	678.9	683.6	692.6	705.3	712.3	716.5	722.4	725.8
After changing:																
Purchases .....	618.8	633.9	648.9	658.1	659.5	662.8	651.2	651.5	655.0	657.7	666.6	677.3	691.7	702.3	723.3	738.0
Transfers .....	621.8	635.8	648.5	655.1	659.9	666.7	662.6	665.0	670.1	673.0	680.8	692.0	699.1	704.2	713.1	720.2
Taxes .....	621.7	635.6	648.4	655.2	660.0	666.6	662.0	664.1	669.1	672.2	680.5	692.1	699.9	705.9	715.9	723.8
<b>Percent change in real GNP (annual rate):</b>																
Base solution .....	9.4	8.1	3.7	3.2	4.9	-0.9	3.0	4.4	2.8	5.4	7.5	4.0	2.4	3.3	1.9	
After changing:																
Purchases .....	10.1	9.8	5.8	0.8	2.0	-6.8	0.2	2.2	1.7	5.5	6.6	8.8	6.3	12.5	8.4	
Transfers .....	9.3	8.2	4.1	3.0	4.2	-2.4	1.5	3.1	1.7	4.7	6.7	4.2	3.0	5.2	4.0	
Taxes .....	9.2	8.3	4.3	3.0	4.1	-2.7	1.3	3.0	1.9	5.0	7.0	4.6	3.5	5.8	4.5	
<b>Percent change in implicit price deflator (annual rate):</b>																
Base solution .....	1.9	3.1	3.9	3.6	3.0	2.8	2.2	4.0	4.8	3.6	3.9	4.3	4.5	4.3	5.5	
After changing:																
Purchases .....	2.0	3.3	4.0	3.4	2.9	2.6	2.8	4.4	5.0	3.9	3.7	4.5	4.2	3.8	4.4	
Transfers .....	1.9	3.3	4.0	3.7	3.0	3.1	2.6	4.5	5.2	4.1	4.2	4.5	4.8	3.9	5.0	
Taxes .....	1.9	3.2	4.0	3.7	3.0	3.0	2.6	4.4	5.1	3.9	4.1	4.4	4.6	3.8	5.0	
<b>Unemployment rate (percent):</b>																
Base solution .....	4.4	4.1	3.9	3.8	3.8	3.6	3.8	3.8	3.8	3.9	3.7	3.6	3.5	3.4	3.4	
After changing:																
Purchases .....	4.9	4.4	3.8	3.3	3.9	4.4	6.0	6.3	6.6	6.9	6.6	6.7	5.7	5.0	3.3	2.4
Transfers .....	4.4	4.1	3.9	3.8	3.8	3.7	3.9	4.0	4.0	4.2	4.2	4.1	4.1	4.1	4.1	4.1
Taxes .....	4.4	4.1	3.9	3.8	3.8	3.7	3.9	4.0	4.2	4.4	4.3	4.2	4.2	4.1	4.1	4.0
<b>Housing starts (millions, annual rate):</b>																
Base solution .....	1.5	1.5	1.4	1.3	1.1	.9	1.1	1.2	1.4	1.4	1.5	1.5	1.5	1.6	1.7	1.5
After changing:																
Purchases .....	1.5	1.5	1.4	1.3	1.1	.9	1.2	1.2	1.4	1.4	1.4	1.4	1.4	1.5	1.7	1.6
Transfers .....	1.5	1.5	1.4	1.3	1.1	.9	1.1	1.2	1.4	1.4	1.3	1.3	1.4	1.5	1.6	1.5
Taxes .....	1.4	1.5	1.4	1.3	1.1	.9	1.0	1.1	1.3	1.3	1.3	1.3	1.4	1.5	1.6	1.6
<b>Percent change in money supply (M1) (annual rate):</b>																
Base solution .....	6.8	6.8	4.7	-7	.2	4.3	5.8	9.5	5.9	5.3	7.9	8.3	8.3	7.6	4.7	
After changing:																
Purchases .....	6.6	6.7	4.8	-4	.3	3.9	5.0	8.5	4.9	4.4	6.9	7.6	8.7	8.4	6.2	
Transfers .....	6.8	6.8	4.7	-6	.2	4.3	5.6	9.2	5.5	4.9	7.4	7.9	8.3	7.6	4.9	
Taxes .....	6.8	6.8	6.8	-6	.2	4.2	5.5	9.1	5.4	4.9	7.4	7.9	8.4	7.8	5.1	
<b>NIA Federal budget, surplus (+) or deficit (-): Base solution .....</b>	-3.1	-1.1	+1.4	+3.0	-1.2	-4.1	-11.6	-12.5	-13.1	-12.3	-9.8	-11.2	-3.9	-1.1	+9.5	+12.0

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APPENDIX TABLE 2.—BALANCED FULL-EMPLOYMENT BUDGET POLICIES (1965:3-1962:2)

	1965:3	1965:4	1966:1	1966:2	1966:3	1966:4	1967:1	1967:2	1967:3	1967:4	1968:1	1968:2	1968:3	1968:4	1969:1	1969:2
<b>Real GNP: Billions of 1958 dollars (annual rate):</b>																
Base solution	622.5	636.6	649.1	655.0	660.2	668.1	666.6	671.6	678.9	683.6	692.6	705.3	712.3	716.5	722.4	725.8
After changing:																
Purchases	623.5	639.9	650.0	654.8	656.0	661.6	656.3	661.2	667.9	672.5	681.5	694.4	704.6	712.7	724.5	732.4
Transfers	622.7	637.6	649.9	655.6	659.7	666.3	662.9	666.7	673.0	677.0	685.3	687.3	704.5	709.7	717.4	723.1
Taxes	622.8	637.9	650.3	655.7	659.4	665.7	662.4	666.2	672.5	676.3	684.5	696.8	704.3	710.0	718.5	724.7
<b>Percent change in real GNP (annual rate):</b>																
Base solution		9.4	8.1	3.7	3.2	4.9	-1.0	3.0	4.4	2.8	5.4	7.5	4.0	2.4	3.4	1.9
After changing:																
Purchases		10.9	6.5	3.0	.7	3.5	-3.2	3.0	4.1	2.8	5.5	7.8	6.0	4.7	6.8	4.4
Transfers		9.9	8.0	3.6	2.5	4.1	-2.1	2.3	3.8	2.4	5.0	7.2	4.2	3.0	4.4	3.2
Taxes		10.1	8.0	3.4	2.3	3.9	-2.0	2.3	3.8	2.3	5.0	7.4	4.4	3.3	4.9	3.5
<b>Percent change in implicit price deflator (annual rate):</b>																
Base solution		1.9	3.1	3.9	3.6	3.0	2.8	2.2	4.0	4.8	3.6	3.9	4.4	4.5	4.3	5.5
After changing:																
Purchases		1.8	3.1	4.2	3.6	3.0	2.8	2.6	4.0	4.7	3.6	3.7	4.2	4.4	4.0	5.0
Transfers		1.8	3.2	4.0	3.8	3.1	3.1	2.5	4.3	5.0	3.9	4.0	4.4	4.7	4.0	5.2
Taxes		1.7	3.2	4.1	3.8	3.0	3.1	2.5	4.2	5.0	3.8	4.0	4.3	4.7	4.0	5.2
<b>Unemployment rate (percent):</b>																
Base solution	4.4	4.1	3.9	3.8	3.8	3.7	3.8	3.8	3.8	3.9	3.7	3.6	3.5	3.4	3.4	3.4
After changing:																
Purchases	4.2	3.7	3.7	3.7	4.3	4.4	5.2	5.1	5.1	5.2	5.0	4.9	4.5	4.0	3.3	2.9
Transfers	4.4	4.1	3.8	3.8	3.7	3.7	3.9	3.9	4.0	4.1	4.0	3.9	3.9	3.8	3.8	3.8
Taxes	4.3	4.1	3.8	3.7	3.7	3.7	4.0	4.0	4.0	4.2	4.1	4.0	4.0	3.9	3.8	3.8
<b>Housing starts (millions, annual rate):</b>																
Base solution	1.5	1.5	1.4	1.3	1.1	.9	1.1	1.2	1.4	1.5	1.5	1.5	1.5	1.6	1.7	1.5
After changing:																
Purchases	1.5	1.5	1.3	1.3	1.1	.9	1.2	1.2	1.4	1.4	1.4	1.4	1.5	1.6	1.7	1.6
Transfers	1.5	1.5	1.4	1.3	1.1	.9	1.1	1.2	1.3	1.4	1.4	1.4	1.5	1.5	1.6	1.5
Taxes	1.5	1.5	1.4	1.3	1.1	.9	1.2	1.1	1.3	1.3	1.3	1.3	1.4	1.5	1.6	1.6
<b>Percent change in money supply (M1) (annual rate):</b>																
Base solution		6.9	6.8	4.7	-.7	.2	4.3	5.8	9.5	5.9	5.3	7.9	8.3	8.3	7.6	4.7
After changing:																
Purchases		6.9	7.0	4.7	-.8	-.1	3.9	5.3	9.1	5.6	5.1	7.7	8.2	8.6	8.0	5.4
Transfers		6.9	6.9	4.8	-.7	.2	4.2	5.6	9.2	5.6	5.1	7.7	8.1	8.3	7.6	4.9
Taxes		6.9	7.0	4.8	-.7	.1	4.1	5.5	9.2	5.6	5.1	7.6	8.1	8.3	7.7	5.0
<b>Change required to balance full employment budget<sup>1</sup>:</b>	+1.2	+3.7	+0.6	+0.1	-4.8	-6.6	-11.5	-9.8	-9.7	-9.1	-8.7	-8.7	-4.8	-1.0	+5.2	+8.6
<b>NIA Federal budget, surplus (+) or deficit (-):</b>																
Base solution	-3.1	-1.1	+1.4	+3.0	-1.2	-4.1	-11.6	-12.5	-13.1	-12.3	-9.8	-11.2	-3.9	-1.1	+9.5	+12.0
After changing:																
Purchases	-3.7	-3.2	+ .9	+3.1	+1.4	-.7	-5.5	-7.5	-8.4	-8.4	-6.5	-7.7	-2.5	-1.3	+6.1	+8.0
Transfers	-4.0	-4.0	+ .9	+3.3	-2.8	+1.0	-2.7	-5.4	-6.5	-6.5	-4.6	-6.1	-2.1	-2.0	+3.8	+4.7
Taxes	-4.1	-4.3	+ .7	+3.4	-3.3	-1.5	-1.7	-4.4	-5.4	-5.6	-3.9	-5.2	-1.6	-1.8	+3.4	+4.2

<sup>1</sup> Positive sign implies additional purchases or transfer payments but a reduction in personal taxes.

APPENDIX TABLE 3.—DISCRETIONARY POLICY (1965:3-1969:2)

	1965:3	1965:4	1966:1	1966:2	1966:3	1966:4	1967:1	1967:2	1967:3	1967:4	1968:1	1968:2	1968:3	1968:4	1969:1	1969:2
<b>Real GNP, billions of 1958 dollars (annual rate):</b>																
Base solution	622.5	636.6	649.1	655.0	660.2	668.1	666.6	671.6	678.9	683.6	692.6	705.3	712.3	716.5	722.4	725.8
1st simulation	622.5	636.7	647.8	652.7	657.7	665.8	664.1	668.9	675.9	680.4	689.2	702.0	708.7	712.8	718.6	721.9
2d simulation	622.5	636.7	647.8	653.3	659.4	668.8	667.6	672.3	678.9	682.9	691.1	702.8	708.6	712.1	717.4	720.6
<b>Percent change in real GNP (annual rate):</b>																
Base solution		9.4	8.1	3.7	3.2	4.9	- .9	3.0	4.4	2.8	5.4	7.5	4.0	2.4	3.3	1.9
1st simulation		9.4	7.2	3.1	3.1	5.0	-1.0	2.9	4.3	2.7	5.3	7.6	3.9	2.3	3.3	1.9
2d simulation		9.4	7.2	3.4	3.8	5.8	- .7	2.8	4.0	2.4	4.9	7.0	3.3	2.0	3.0	1.8
<b>Percent change in implicit price deflator (annual rate):</b>																
Base solution		1.9	3.1	3.9	3.6	3.0	2.8	2.2	4.0	4.8	3.6	3.9	4.3	4.5	4.3	5.5
1st simulation		1.8	3.3	4.0	3.8	3.1	3.0	2.4	4.1	4.9	3.9	4.1	4.5	4.8	4.4	5.8
2d simulation		1.8	3.3	4.0	3.8	3.1	2.9	2.3	4.2	5.0	4.1	4.2	4.5	4.9	4.5	5.8
<b>Unemployment rate (percent):</b>																
Base solution	4.4	4.1	3.9	3.8	3.8	3.7	3.8	3.8	3.8	3.9	3.7	3.6	3.5	3.4	3.4	3.4
1st simulation	4.4	4.1	3.9	3.8	3.8	3.7	3.9	3.9	3.9	4.0	3.8	3.6	3.6	3.5	3.5	3.5
2d simulation	4.4	4.1	3.9	3.8	3.8	3.7	3.8	3.7	3.7	3.8	3.6	3.4	3.4	3.4	3.4	3.5
<b>Housing starts (millions, annual rate):</b>																
Base solution	1.5	1.5	1.4	1.3	1.1	0.9	1.1	1.2	1.4	1.4	1.5	1.5	1.5	1.6	1.7	1.5
1st simulation	1.5	1.5	1.4	1.2	1.0	0.9	1.2	1.1	1.3	1.4	1.4	1.4	1.5	1.5	1.6	1.5
2d simulation	1.5	1.5	1.4	1.4	1.2	1.1	1.2	1.2	1.4	1.4	1.4	1.3	1.4	1.4	1.6	1.4
<b>Short-term interest rate:</b>																
Base solution	4.4	4.5	5.0	5.4	5.8	6.0	5.5	4.7	5.0	5.3	5.6	6.1	6.0	6.0	6.7	7.5
1st simulation	4.4	4.5	5.0	5.4	5.7	5.7	5.1	4.3	4.5	4.7	4.9	5.1	5.1	5.0	5.8	6.7
2d simulation	4.4	4.3	4.4	4.8	5.2	5.4	4.9	4.6	4.9	5.0	5.1	5.2	5.2	5.1	5.8	6.7
<b>Long-term interest rate:</b>																
Base solution	4.7	4.8	5.0	5.2	5.5	5.7	5.4	5.6	5.9	6.3	6.4	6.6	6.4	6.6	7.0	7.2
1st simulation	4.7	4.8	5.0	5.2	5.5	5.6	5.4	5.5	5.8	6.1	6.4	6.2	6.3	6.0	6.2	6.7
2d simulation	4.7	4.8	4.9	5.1	5.4	5.5	5.2	5.3	5.7	6.1	6.2	6.3	6.1	6.2	6.5	6.7
<b>Percent change in money supply (M1) (annual rate):</b>																
Base solution		6.8	6.8	4.7	- .7	.2	4.3	5.8	9.5	5.9	5.3	7.9	8.3	8.3	7.6	4.7
1st simulation		6.9	6.8	6.9	7.1	7.6	7.9	8.2	10.1	5.4	4.1	5.8	7.9	7.4	7.3	4.3
2d simulation		6.2	5.0	6.7	8.1	8.9	9.2	11.1	11.1	5.2	3.5	5.2	7.1	6.7	6.6	3.8
<b>NIA Federal budget, surplus (+) or deficit (-):</b>																
Base solution	-3.1	-1.1	+1.4	+3.0	-1.2	-4.1	-11.6	-12.5	-13.1	-12.3	-9.8	-11.2	-3.9	-1.1	+9.5	+12.0
1st simulation	-3.0	-1.1	+5.7	+7.4	+3.0	+1.6	-2.1	-2.9	-3.6	-2.9	- .2	-1.3	+7.8	+10.6	+21.2	+24.2
2d simulation	-3.0	-1.1	+5.9	+7.7	+3.7	+1.8	- .9	-2.1	-2.9	-2.3	+ .2	-1.3	+7.4	+10.0	+20.5	+23.5

APPENDIX TABLE 4.—BALANCED BUDGET POLICIES (1969:3–1972:2)

	1969:3	1969:4	1970:1	1970:2	1970:3	1970:4	1971:1	1971:2	1971:3	1971:4	1972:1	1972:2
<b>Real GNP, billions of 1958 dollars (annual rate):</b>												
Base solution.....	729.2	725.1	721.2	722.1	727.2	719.3	736.9	742.1	747.2	759.1	770.9	786.6
After changing:												
Purchases.....	736.4	732.9	722.1	711.9	710.6	694.7	709.0	706.3	707.4	715.5	731.5	743.1
Transfers.....	730.7	727.4	722.8	721.0	723.0	711.7	726.4	727.7	729.2	737.2	746.9	759.7
Taxes.....	730.9	727.8	722.8	720.4	721.8	710.0	724.5	725.6	727.1	735.3	745.6	759.0
<b>Percent change in real GNP (annual rate):</b>												
Base solution.....		-2.2	-2.1	.6	2.9	-4.3	10.2	2.9	2.8	6.5	6.4	8.4
After changing:												
Purchases.....		-1.9	-5.8	-5.5	-.7	-8.7	8.5	-1.5	.6	4.7	9.2	6.5
Transfers.....		-1.8	-2.5	-1.0	1.1	-6.1	8.5	.7	.8	4.5	5.4	7.0
Taxes.....		-1.7	-2.7	-1.3	.8	-6.4	8.4	.6	.8	4.6	5.7	7.4
<b>Percent change in implicit price deflator (annual rate):</b>												
Base solution.....		5.4	6.4	4.6	4.1	6.3	4.8	4.8	2.6	1.9	5.5	1.9
After changing:												
Purchases.....		5.0	5.5	4.2	4.7	6.9	5.6	5.4	4.0	3.0	6.9	1.2
Transfers.....		5.2	6.0	4.7	4.5	6.9	5.3	5.9	3.7	3.1	6.8	2.7
Taxes.....		5.3	6.1	4.8	4.5	7.1	5.3	5.9	3.7	3.1	6.5	2.6
<b>Unemployment rate (percent):</b>												
Base solution.....	3.6	3.6	4.2	4.7	5.2	5.8	6.0	5.9	5.9	5.9	5.9	5.7
After changing:												
Purchases.....	2.6	2.8	4.4	6.2	7.1	8.6	8.8	9.6	9.7	10.0	9.2	9.6
Transfers.....	3.6	3.6	4.2	4.8	5.3	6.0	6.3	6.3	6.5	6.6	6.7	6.7
Taxes.....	3.6	3.6	4.2	4.8	5.3	6.1	6.4	6.5	6.7	6.9	7.0	7.0
<b>Housing starts (millions, annual rate):</b>												
Base solution.....	1.4	1.3	1.2	1.3	1.5	1.7	1.8	2.0	2.1	2.2	2.4	2.3
After changing:												
Purchases.....	1.4	1.3	1.3	1.4	1.5	1.7	1.8	1.9	1.9	2.0	2.1	2.0
Transfers.....	1.4	1.3	1.3	1.3	1.5	1.7	1.8	1.9	1.9	2.0	2.1	2.0
Taxes.....	1.4	1.3	1.3	1.3	1.4	1.6	1.7	1.8	1.8	1.8	2.0	1.9
<b>Percent change in money supply (M1) (annual rate):</b>												
Base.....		2.1	4.4	6.8	6.1	5.9	6.5	11.3	5.7	2.8	5.3	8.6
After changing:												
Purchases.....		2.5	4.7	6.6	5.2	4.7	5.5	10.3	5.4	.9	4.6	8.0
Transfers.....		2.2	4.5	6.8	5.9	5.6	6.1	10.8	6.0	1.4	4.8	8.0
Taxes.....		2.2	4.5	6.8	5.8	5.5	6.0	10.7	6.0	1.4	4.8	8.0
<b>NIA Federal budget, surplus (+) or deficit (-): Base solution.....</b>	6.7	4.3	-2.6	-11.9	-13.8	-19.3	-18.0	-23.4	-22.7	-23.5	-14.9	-19.6

APPENDIX TABLE 5.—BALANCED FULL-EMPLOYMENT BUDGET POLICIES (1963:3-1972:2)

	1969:3	1969:4	1970:1	1970:2	1970:3	1970:4	1971:1	1971:2	1971:3	1971:4	1972:1	1972:2
Real GNP, billions of 1958 dollars (annual rate):												
Base solution.....	729.2	725.1	721.2	722.1	727.2	719.3	736.9	742.1	747.2	759.1	770.9	786.6
After changing:												
Purchases.....	736.1	733.8	730.5	726.3	731.8	723.1	740.1	742.5	748.0	758.8	766.8	778.7
Transfers.....	731.0	728.5	725.9	726.3	731.4	723.6	741.6	746.2	751.2	762.6	772.8	786.2
Taxes.....	731.7	729.5	727.1	727.0	731.7	723.7	741.5	745.7	750.6	761.9	771.7	784.6
Percent change in real GNP (annual rate):												
Base solution.....		-2.3	-2.2	.5	2.9	-4.4	10.2	2.9	2.8	6.5	6.4	8.4
After changing:												
Purchases.....		-1.2	-1.8	-2.3	3.1	-4.8	9.8	1.3	3.0	5.9	4.3	6.3
Transfers.....		-1.4	-1.5	.3	2.8	-4.3	10.3	2.5	2.7	6.2	5.5	7.1
Taxes.....		-1.2	-1.3	-.1	2.6	-4.5	10.2	2.3	2.7	6.1	5.2	6.9
Percent change in implicit price deflator (annual rate):												
Base solution.....		5.4	6.4	4.6	4.1	6.4	4.7	4.9	2.6	1.9	5.5	1.9
After changing:												
Purchases.....		5.2	5.9	4.1	4.5	6.0	4.6	5.0	3.2	2.4	5.8	2.5
Transfers.....		5.2	5.8	4.3	4.0	5.9	4.4	4.9	2.7	2.2	5.9	2.7
Taxes.....		5.3	5.8	4.4	3.9	5.9	4.5	5.1	2.7	2.3	6.0	2.7
Unemployment rate (percent):												
Base solution.....	3.6	3.6	4.2	4.7	5.2	5.8	6.0	5.9	6.0	6.0	5.9	5.7
After changing:												
Purchases.....	2.7	2.6	3.2	4.5	4.8	5.6	5.7	6.0	5.8	5.8	6.2	6.3
Transfers.....	3.6	3.6	4.1	4.6	5.0	5.7	5.8	5.7	5.7	5.6	5.6	5.4
Taxes.....	3.5	3.5	4.0	4.6	5.0	5.6	5.8	5.7	5.7	5.6	5.6	5.5
Housing starts (millions, annual rate):												
Base solution.....	1.4	1.3	1.2	1.3	1.5	1.7	1.8	2.0	2.1	2.2	2.4	2.3
After changing:												
Purchases.....	1.4	1.3	1.2	1.4	1.5	1.8	1.9	2.0	2.1	2.2	2.4	2.2
Transfers.....	1.4	1.3	1.3	1.4	1.6	1.8	1.9	2.1	2.2	2.2	2.4	2.2
Taxes.....	1.4	1.4	1.3	1.4	1.6	1.8	1.9	2.1	2.1	2.2	2.4	2.2
Percent changes in money supply (M1) (annual rate):												
Base solution.....		2.1	4.4	6.8	6.1	5.9	6.5	11.3	6.6	2.0	5.3	8.6
After changing:												
Purchases.....		2.5	4.9	7.2	6.0	5.8	6.3	11.2	6.4	1.8	5.2	8.3
Transfers.....		2.2	4.6	7.0	6.2	5.9	6.5	11.3	6.5	1.9	5.3	8.5
Taxes.....		2.3	4.7	7.1	6.2	5.9	6.4	11.2	6.5	1.9	5.2	8.4
Change required to balance full employment budget <sup>1</sup> .....	+10.8	+10.8	+10.2	+5	+3.2	+1.5	+8	-3.5	-8	-1.6	-6.8	-10.6
NIA Federal budget, surplus (+) or deficit (-):												
Base solution.....	+6.7	+4.3	-2.6	-11.9	-13.8	-19.3	-18.0	-23.4	-22.7	-23.5	-14.9	-19.6
After changing:												
Purchases.....	+8	-6	-7.7	-11.4	-15.2	-20.1	-18.3	-22.1	-22.2	-22.3	-10.5	-13.3
Transfers.....	-1.6	-3.2	-9.8	-11.3	-15.8	-20.2	-18.2	-19.9	-21.7	-21.7	-9.0	-10.8
Taxes.....	-2.8	-4.1	-10.8	-11.1	-16.1	-20.5	-18.4	-19.6	-21.7	-21.6	-8.2	-9.7

<sup>1</sup> Positive sign implies additional purchases or transfer payments but a reduction in personal taxes.

APPENDIX TABLE 6.—DISCRETIONARY POLICY (1969:3-1972:2)

	1969:3	1969:4	1970:1	1970:2	1970:3	1970:4	1971:1	1971:2	1971:3	1971:4	1972:1	1972:2
<b>Real GNP, billions of 1958 dollars (annual rate):</b>												
Base solution.....	729.2	725.1	721.2	722.1	727.2	719.3	736.9	742.1	747.2	759.1	770.9	786.6
1st simulation.....	731.0	728.4	725.7	727.7	733.5	726.3	744.3	749.3	754.0	765.6	777.1	792.0
2d simulation.....	731.7	729.8	727.9	730.5	737.0	731.0	750.7	757.5	764.1	777.4	790.0	805.6
<b>Percent change in real GNP (annual rate):</b>												
Base solution.....		-2.3	-2.2	5.0	2.9	-4.4	10.2	2.9	2.8	6.5	6.4	8.4
1st simulation.....		-1.5	-1.5	1.1	4.0	-3.9	10.3	2.7	2.5	6.3	6.1	7.9
2d simulation.....		-1.0	-1.1	1.5	3.6	-3.3	11.3	3.7	3.5	7.1	6.6	8.1
<b>Percent change in implicit price deflator (annual rate):</b>												
Base solution.....		5.4	6.4	4.6	4.1	6.4	4.7	4.9	2.6	1.9	5.5	1.9
1st simulation.....		5.3	5.8	4.3	3.8	5.6	4.3	4.8	2.7	2.2	5.8	2.7
2d simulation.....		5.3	5.7	4.1	3.7	5.3	3.9	4.7	2.3	1.8	5.7	2.8
<b>Unemployment rate (percent):</b>												
Base solution.....	3.6	3.6	4.2	4.7	5.2	5.8	6.0	5.9	5.9	5.9	5.9	5.7
1st simulation.....	3.6	3.5	4.1	4.6	5.0	5.6	5.7	5.6	5.5	5.5	5.4	5.2
2d simulation.....	3.5	3.5	4.0	4.5	4.8	5.4	5.4	5.2	5.1	4.9	4.7	4.4
<b>Housing starts (millions, annual rate):</b>												
Base solution.....	1.4	1.3	1.2	1.3	1.5	1.7	1.8	2.0	2.1	2.2	2.4	2.3
1st simulation.....	1.4	1.4	1.3	1.4	1.6	1.8	2.0	2.1	2.2	2.3	2.4	2.3
2d simulation.....	1.4	1.4	1.3	1.4	1.6	1.9	2.1	2.3	2.3	2.4	2.6	2.4
<b>Short-term interest rate (percent):</b>												
Base solution.....	8.5	8.6	8.6	8.2	7.8	6.3	4.6	5.0	5.7	5.1	4.1	4.6
1st simulation.....	8.5	8.6	8.6	8.2	7.9	6.3	4.6	5.1	5.8	5.0	4.0	4.5
2d simulation.....	8.5	8.5	8.4	7.9	7.5	6.0	4.3	4.8	5.5	4.8	3.8	4.3
<b>Long-term interest rate:</b>												
Base solution.....	7.4	7.9	8.3	8.5	8.8	8.5	7.9	8.0	8.1	7.8	7.7	7.7
1st simulation.....	7.4	7.9	8.3	8.5	8.7	8.5	7.9	8.0	8.1	7.8	7.7	7.7
2d simulation.....	7.4	7.8	8.2	8.4	8.6	8.4	7.7	7.8	7.9	7.6	7.4	7.5
<b>Percent change in money supply (M1) (annual rate):</b>												
Base solution.....		2.1	4.4	6.8	6.1	5.9	6.5	11.3	6.6	2.0	5.3	8.6
1st simulation.....		2.2	4.6	7.0	6.3	6.0	6.5	11.3	7.0	6.8	7.4	7.2
2d simulation.....		6.7	7.3	7.7	6.9	6.7	6.5	7.2	6.4	6.4	7.2	7.6
<b>NIA Federal budget, surplus (+) or deficit (-):</b>												
Base solution.....	+6.7	+4.3	-2.6	-11.9	-13.8	-19.3	-18.0	-23.4	-22.7	-23.5	-14.9	-19.6
1st simulation.....	-4	-1.9	-9.2	-18.2	-20.2	-24.3	-21.0	-24.3	-22.0	-22.7	-14.0	-18.1
2d simulation.....	-2.0	-3.1	-10.3	-19.2	-21.0	-27.0	-25.3	-29.5	-29.0	-49.8	-20.1	-24.0

APPENDIX TABLE 7.—BALANCED BUDGET POLICIES (1972:3-1974:2)

	1972:3	1972:4	1973:1	1973:2	1973:3	1973:4	1974:1	1974:2
<b>Real GNP, billions of 1958 dollars (annual rate):</b>								
Base solution.....	758.1	814.2	832.8	837.4	840.8	845.7	830.5	827.1
After changing:								
Purchases.....	790.5	791.7	815.1	822.1	829.8	835.5	822.2	820.2
Transfers.....	796.3	807.5	824.2	828.0	831.9	836.9	821.9	818.6
Taxes.....	795.9	806.3	823.0	827.1	831.8	837.5	823.1	820.1
<b>Percent change in real GNP (annual rate):</b>								
Base solution.....		8.3	9.5	2.2	1.6	2.4	-7.0	-1.6
After changing:								
Purchases.....		.6	12.4	3.5	3.8	2.8	-6.2	-1.0
Transfers.....		5.7	8.5	1.9	1.9	2.4	-7.0	-1.6
Taxes.....		5.3	8.6	2.0	2.3	2.8	-6.7	-1.4
<b>Percent change in implicit price deflator (annual rate):</b>								
Base solution.....		4.1	5.5	7.3	8.3	8.6	12.3	9.4
After changing:								
Purchases.....		3.2	8.0	7.4	8.3	8.0	12.4	8.6
Transfers.....		4.6	6.3	7.8	8.5	8.7	12.8	9.3
Taxes.....		4.7	6.0	7.6	8.4	8.7	12.7	9.2
<b>Unemployment rate (percent):</b>								
Base solution.....	5.5	5.3	5.0	4.9	4.7	4.7	5.2	5.2
After changing:								
Purchases.....	6.5	7.7	6.5	6.1	5.5	5.5	5.9	5.8
Transfers.....	5.6	5.3	5.2	5.1	5.0	5.0	5.5	5.5
Taxes.....	5.6	5.4	5.2	5.2	5.0	5.1	5.6	5.6
<b>Housing starts (millions, annual rate):</b>								
Base solution.....	2.4	2.4	2.4	2.2	2.0	1.6	1.6	1.6
After changing:								
Purchases.....	2.4	2.4	2.4	2.1	1.9	1.5	1.6	1.6
Transfers.....	2.4	2.4	2.4	2.1	1.9	1.5	1.5	1.5
Taxes.....	2.3	2.3	2.3	2.1	1.9	1.5	1.5	1.5
<b>Percent change in money supply (M1) (annual rate):</b>								
Base solution.....		8.7	7.1	7.8	5.6	4.6	5.9	7.6
After changing:								
Purchases.....		8.2	5.7	6.6	5.1	4.8	6.2	8.0
Transfers.....		8.6	6.7	7.3	5.2	4.5	5.9	7.7
Taxes.....		8.5	6.6	7.2	5.2	4.5	6.0	7.8
<b>NIA Federal budget, surplus (+) or deficit (-)</b>								
Base solution.....	-9.8	-25.6	-11.2	-7.4	-1.7	-2.3	-1.5	-1.3

APPENDIX TABLE 8.—BALANCED FULL-EMPLOYMENT BUDGET POLICY (1972:3-1974:2)

	1972:3	1972:4	1973:1	1973:2	1973:3	1973:4	1974:1	1974:2
Real GNP, billions of 58 dollars (annual rate):								
Base solution.....	798.1	814.2	832.8	837.4	840.8	845.7	830.5	827.1
After changing:								
Purchases.....	797.3	804.4	824.8	833.0	842.2	851.3	840.4	841.2
Transfers.....	797.9	811.0	828.2	832.9	838.2	845.3	832.6	831.9
Taxes.....	797.8	809.9	827.0	832.1	838.4	846.5	834.6	834.6
Percent change in real GNP (annual rate):								
Base solution.....		8.3	9.5	2.2	1.6	2.4	-7.0	-1.6
After changing:								
Purchases.....		3.6	10.5	4.0	4.5	4.4	-5.0	.3
Transfers.....		6.7	8.8	2.3	2.6	3.4	-5.9	-1.3
Taxes.....		6.2	8.7	2.5	3.1	3.9	-5.5	0
Percent change in implicit price deflator (annual rate):								
Base solution.....		4.0	5.5	7.3	8.3	8.6	12.3	9.4
After changing:								
Purchases.....		3.2	6.8	7.8	8.6	8.5	12.6	9.5
Transfers.....		4.3	6.0	7.6	8.4	8.5	12.3	8.9
Taxes.....		4.5	5.8	7.5	8.3	8.5	12.1	8.7
Unemployment rate (percent):								
Base solution.....	5.5	5.3	5.0	4.9	4.7	4.7	5.2	5.1
After changing:								
Purchases.....	5.6	6.4	5.7	5.1	4.3	3.9	4.1	3.7
Transfers.....	5.5	5.3	5.1	5.0	4.8	4.8	5.2	5.2
Taxes.....	5.6	5.3	5.1	5.0	4.8	4.8	5.2	5.0
Housing starts (millions, annual rate):								
Base solution.....	2.4	2.4	2.4	2.2	2.0	1.6	1.6	1.6
After changing:								
Purchases.....	2.4	2.4	2.4	2.2	1.9	1.5	1.6	1.5
Transfers.....	2.4	2.4	2.4	2.2	1.9	1.5	1.6	1.5
Taxes.....	2.4	2.3	2.3	2.1	2.0	1.6	1.7	1.6
Percentage change in money supply (M1) (annual rate):								
Base solution.....		8.7	7.1	7.8	5.6	4.6	5.9	7.6
After changing:								
Purchases.....		8.6	6.5	7.3	5.	5.2	6.7	8.7
Transfers.....		8.7	6.9	7.5	5.5	4.7	6.2	8.1
Taxes.....		8.6	6.8	7.5	5.5	4.3	6.3	8.2
Change required to balance full-employment budget <sup>1</sup> :	-1.6	-19.1	-10.2	-2.0	+8.	+14.9	+20.8	+26.1
NIA Federal budget, surplus (+) or deficit (-):								
Base solution.....	-9.8	-25.6	-11.2	-7.4	-1.	-2.3	-1.5	-1.3
After changing:								
Purchases.....	-8.7	-14.0	-5.9	-7.1	-7.	-11.4	-13.3	-15.4
Transfers.....	-8.4	-10.2	-4.0	-6.9	-9.	-14.4	-17.2	-20.5
Taxes.....	-8.2	-8.2	-3.5	-7.2	-10.	-15.4	-19.0	-22.9

<sup>1</sup> Positive sign implies additional purchases or transfer payments but a reduction in personal taxes.



APPENDIX TABLE 9.—DISCRETIONARY POLICY (1972:3-1974:2)

	1972:3	1972:4	1973:1	1973:2	1973:3	1973:4	1974:1	1974:2
<b>Real GNP, billions of 58 dollars (annual rate):</b>								
Base solution.....	798.1	814.2	832.8	837.4	840.8	845.7	830.5	827.1
1st simulation.....	800.2	816.5	835.1	842.3	848.5	854.7	841.0	838.6
2d simulation.....	800.2	816.5	835.1	842.2	848.9	856.7	845.2	845.1
<b>Percent change in real GNP (annual rate):</b>								
Base solution.....		8.3	9.5	2.2	1.6	2.4	-7.0	-1.7
1st simulation.....		8.4	9.4	3.5	3.0	2.9	-6.6	-1.1
2d simulation.....		8.4	9.4	3.4	3.3	3.7	-5.4	-1.1
<b>Percent change in implicit price deflator (annual rate):</b>								
Base solution.....		4.0	5.5	7.3	8.3	8.6	12.3	9.4
1st simulation.....		3.8	5.6	7.5	8.4	8.3	12.1	9.0
2d simulation.....		3.8	5.6	7.5	8.5	8.3	11.9	8.7
<b>Unemployment rate (percent):</b>								
Base solution.....	5.5	5.3	5.0	4.9	4.7	4.7	5.2	5.1
1st simulation.....	5.5	5.2	4.9	4.7	4.5	4.4	4.8	4.7
2d simulation.....	5.5	5.2	4.9	4.7	4.5	4.4	4.7	4.5
<b>Housing starts (millions, annual rate):</b>								
Base solution.....	2.4	2.4	2.4	2.2	2.0	1.6	1.6	1.6
1st simulation.....	2.4	2.4	2.4	2.2	2.0	1.6	1.7	1.7
2d simulation.....	2.4	2.4	2.4	2.2	2.2	1.8	2.0	1.9
<b>Short-term interest rate:</b>								
Base solution.....	4.9	5.3	6.3	7.5	9.9	9.0	8.3	10.5
1st simulation.....	4.9	5.4	6.3	7.6	10.0	9.1	8.3	10.4
2d simulation.....	4.9	5.4	6.3	6.6	7.2	6.2	6.3	8.7
<b>Long-term interest rate:</b>								
Base solution.....	7.6	7.5	7.6	7.6	8.0	8.0	8.2	8.7
1st simulation.....	7.6	7.5	7.6	7.7	8.0	8.0	8.2	8.7
2d simulation.....	7.6	7.5	7.6	7.6	7.6	7.4	7.4	7.8
<b>Percent change in money supply (M1) (annual rate):</b>								
Base solution.....		8.7	7.1	7.8	5.6	4.6	5.9	5.9
1st simulation.....		7.5	7.6	7.9	8.4	9.3	7.5	7.9
2d simulation.....		7.5	7.6	2.9	-2	8.6	11.7	11.2
<b>NIA Federal budget, surplus (+) or deficit (-):</b>								
Base solution.....	-9.8	-25.6	-11.2	-7.4	-1.7	-2.3	-1.5	-1.3
1st simulation.....	-15.3	-29.1	-13.8	-19.4	-13.0	-12.7	-14.6	-13.0
2d simulation.....	-15.3	-29.1	-13.8	-19.0	-11.9	-10.8	-12.0	-9.6

## APPENDIX B. "BALANCED BUDGET" SIMULATIONS FOR THE U.S. ECONOMY

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The unprecedented current upsurge of inflation has revived interest in "old fashioned" concepts of fiscal discipline. It has been suggested that balancing the budget will tend to check inflation. Yet many economists have argued that, particularly in the trough of the business cycle, balancing the budget will have serious impacts on employment and production with relatively little effect on the rate of inflation. This paper summarizes some simulations of the Wharton model over recent historical periods to test what would have happened if the Federal Government budget had been in balance.

### ALTERNATIVE BALANCED BUDGET POLICIES

The tests were carried out over three periods—1965.3 to 1969.2, 1966.3 to 1972.2, and 1972.3 to 1974.2. The first of these periods, is a time of boom interrupted temporarily by the quasi-recession of 1966-67. The second period represents a recession, and the third represents the upswing which has culminated in the current inflation.

With the exception of only a few quarters—early 1966 and during the tax surcharge in 1969—this is a time of substantial budget deficits. Thus, during most of this period we make cuts in spending or increases in taxes in order to achieve budget balance. This gives a misleading picture of the economic setting on which budgetary changes have been imposed. There are times when stabilization policy would call for surpluses and others when deficits would be appropriate. At times a policy of budget balance may even be destabilizing.

In each case we have tested three alternative policies to balance the budget:

- (1) Change in the personal income tax;
- (2) Change in transfer payments to persons; and
- (3) Change in government purchases of goods and services.

The first two policies involve relatively simple adjustments. But the Government purchases policy involves numerous changes in the model assumptions, viz the assumption that changes in purchases are split 33 percent to 67 percent between civilian and defense expenditures, that half of the change in spending is in wage payments, and that the Government wage rate is not affected. The last point particularly is important since as a result changes in Government purchasing have significant direct impact on Government employment.

In each instance, we have first adjusted the model so as to provide a base solution equal (or almost equal) to the actual developments of the period. Then alternative solutions have been run, which can be compared to the base solution, with the model programed to make the required policy adjustment to achieve budget balance.

### SIMULATION RESULTS

Tables 1, 2, and 3, present results of the three policy simulations over the three simulation periods. On the top of each table, we present the base solution budget deficit (national accounts concept). Secondly, we compare the impact of the alternative budget balancing policies on key variables for the economy. Finally, on the bottom of the table we show for each quarter the policy adjustment which was required to balance the budget.

Balancing the budget in a period of deficit lowers real GNP and increases unemployment since budget balance during such a period implies increasing taxes or cutting expenditures. Naturally, the reverse will be true in a period where there would otherwise be a surplus, since in that case budget balance calls for tax cuts or expenditure increases. A critical question to which there is not always an a priori answer is the impact on inflation, considering the fact that

inflation depends not only on demand pressure but also on cost considerations which may be greatly influenced by wage demands and productivity.

By and large the simulations with the model support the notions of real effects on output and employment noted above. The balanced budget policy simulation starting with 1965.3 reduces real GNP by \$11 billion by the last quarter of 1968 when the personal income tax is used as the budget balancing policy tool. The unemployment rate is 0.7 percent higher, 3.4 percent (base solution) to 4.1 percent with the balanced budget. The activity level stays below the base solution in the first half of 1969 even though taxes were decreased at that period to offset the base solution surplus. This is because of lower levels of income and employment that existed throughout the three and a half years of the balanced budget simulation.

TABLE 1.—BALANCED BUDGET POLICIES, 1965.3-1969.2

	1965. 3	1965. 4	1966. 1	1966. 2	1966. 3	1966. 4	1967. 1	1967. 2	1967. 3	1967. 4	1968. 1	1968. 2	1968. 3	1968. 4	1969. 1	1969. 2
Base solution, Federal Government budget, surplus (+) or deficit (-).....	-3.0	-1.1	+1.2	3.2	-1.2	-4.1	-11.7	+12.4	-13.1	-12.4	-9.8	-11.0	-3.8	-0.9	+9.5	+12.3
Real GNP (billions of 1958 dollars):																
Base solution.....	622.5	636.7	649.0	654.8	659.9	667.7	666.3	671.2	678.6	683.5	692.6	705.4	712.5	716.9	722.7	725.9
Budget balance with personal income tax.....	621.7	635.6	648.4	655.2	660.0	666.6	662.0	664.1	669.1	672.2	680.5	692.1	699.9	705.9	715.9	723.8
Budget balance with transfer payment.....	621.8	635.8	648.5	655.1	659.9	666.7	662.6	665.0	670.1	673.0	680.8	692.0	699.1	704.2	713.1	720.2
Budget balance with purchases of goods and services.....	618.8	633.9	648.9	658.1	659.4	662.8	651.2	651.5	655.0	657.7	666.6	677.3	691.7	702.3	723.3	738.0
Implicit deflator for GNP:																
Base solution.....	1.20	1.78	3.23	4.05	3.71	3.00	2.84	2.22	3.96	4.73	3.67	3.91	4.28	4.67	4.22	5.56
Budget balance with personal income tax.....	1.23	1.85	3.23	.01	3.71	3.00	2.98	2.60	4.41	5.13	3.90	4.06	4.36	4.65	3.77	5.01
Budget balance with transfer payment.....	1.23	1.85	3.27	3.97	3.68	3.00	3.05	2.64	4.48	5.24	4.10	4.19	4.52	4.77	3.92	4.97
Budget balance with purchases of goods and services.....	1.09	2.03	3.30	4.01	3.42	2.89	2.63	2.78	4.35	5.03	3.90	3.73	4.50	4.19	3.81	4.40

TABLE 1.—BALANCED BUDGET POLICIES, 1965.3-1969.2—Continued

	1965.3	1965.4	1966.1	1966.2	1966.3	1966.4	1967.1	1967.2	1967.3	1967.4	1968.1	1968.2	1968.3	1968.4	1969.1	1969.2
Unemployment rate (percent):																
Base solution	4.36	4.10	3.83	3.79	3.73	3.67	3.82	3.82	3.81	3.92	3.73	3.53	3.49	3.35	3.33	3.37
Budget balance with personal income tax	4.37	4.13	3.87	3.80	3.75	3.71	3.94	4.04	4.15	4.38	4.29	4.20	4.24	4.13	4.08	4.03
Budget balance with transfer payment	4.37	4.12	3.86	3.80	3.75	3.70	3.89	3.96	4.04	4.24	4.16	4.07	4.12	4.06	4.08	4.11
Budget balance with purchases of goods and services	4.90	4.40	3.75	3.29	3.91	4.40	5.97	6.33	6.65	6.85	6.61	6.72	5.69	5.01	3.28	2.39
Change in policy variable required to achieve balanced budget:																
Change in personal income tax	+3.3	+1.5	-1.0	-3.5	+1.1	+4.6	+13.4	+14.8	+16.1	+15.8	+13.6	+15.1	+7.3	+3.5	-8.5	-13.4
Change in transfer payment	-3.7	-1.6	+1.2	+3.9	-1.4	-5.2	-15.1	-16.7	-18.2	-17.9	-15.4	-17.3	-8.8	-4.7	+9.0	+14.2
Change in purchases of goods and services	-4.5	-2.1	+1.3	+4.8	-1.4	-6.3	-18.5	-20.6	-22.4	-22.4	-20.2	-22.3	-11.1	-5.2	+12.5	+20.7

† Change in Government purchases of goods and services has corresponding changes made in Government wage payments and Government employment.

TABLE 2.—BALANCED BUDGET POLICIES, 1969.3-1972.2

	1969.3	1969.4	1970.1	1970.2	1970.3	1970.4	1971.1	1971.2	1971.3	1971.4	1972.1	1972.2
<b>Base solution, Federal Government budget, surplus (+) deficit (-)</b> .....	6.6	4.5	-2.7	-12.0	-14.1	-19.6	-18.5	-23.6	-22.9	-23.5	-14.7	-19.3
<b>Real GNP (billions of 1958 dollars):</b>												
Base solution.....	729.2	725.1	721.2	722.2	727.2	719.5	737.6	742.8	748.2	760.2	772.0	787.5
Budget balance with personal income tax.....	730.9	727.8	722.8	720.4	721.8	710.0	724.5	725.6	727.1	735.3	745.6	759.0
Budget balance with transfer payments.....	730.7	727.4	722.8	721.0	723.0	711.7	726.4	727.7	729.2	737.2	746.9	759.7
Budget balance with purchases of goods and services.....	736.4	732.9	722.1	711.9	710.6	694.7	708.9	706.2	707.4	715.5	731.5	743.1
<b>Implicit deflator for GNP:</b>												
Base solution.....	6.08	5.44	6.22	4.53	4.05	6.06	4.43	4.86	2.58	2.05	5.59	2.15
Budget balance with personal income tax.....	6.04	5.34	6.07	4.75	4.51	7.14	5.34	5.93	3.65	3.08	6.47	2.56
Budget balance with transfer payments.....	6.04	5.24	6.03	4.69	4.51	6.89	5.32	5.88	3.69	3.11	6.77	2.70
Budget balance with purchases of goods and services.....	6.57	5.04	5.46	4.17	4.68	6.90	5.63	5.43	3.96	3.03	6.89	1.23
<b>Unemployment rate (percent):</b>												
Base solution.....	3.60	3.62	4.23	4.78	5.22	5.90	6.04	5.96	5.95	5.89	5.82	5.61
Budget balance with personal income tax.....	3.56	3.55	4.16	4.77	5.30	6.12	6.41	6.51	6.71	6.87	6.97	6.97
Budget balance with transfer payments.....	3.58	3.58	4.18	4.76	5.25	6.02	6.27	6.33	6.49	6.63	6.7	6.74
Budget balance with purchases of goods and services.....	2.63	2.78	4.35	6.18	7.10	8.58	8.84	9.58	9.73	9.96	9.20	9.64
<b>Change in policy variable required to achieve balance budget:</b>												
Change in personal income tax.....	-7.6	-5.8	+2.4	+13.2	+16.6	+22.7	+22.5	+28.6	+28.6	+29.6	+20.7	+26.1
Change in transfer payments.....	-8.6	+6.5	-2.7	-15.0	-18.5	-26.0	-25.3	-32.2	-32.3	-33.8	-23.8	-30.2
Change in purchases of goods and services <sup>1</sup> .....	+11.1	+8.8	-3.3	-19.0	-23.8	-32.4	-32.1	-40.6	-40.0	-40.7	-28.1	-35.6

<sup>1</sup> Change in Government purchases of goods and services has corresponding changes made in Government wage payments and Government employment.

TABLE 3.—BALANCED BUDGET POLICIES, 1972.3-1974.2

	1972. 3	1972. 4	1973. 1	1973. 2	1973. 3	1973. 4	1974. 1	1974. 2
Base solution, Federal Government budget, surplus (+) or deficit (-)	-9. 7	-25. 3	-11. 1	-7. 3	-1. 6	-2. 4	-1. 0	-0. 8
Real GNP (billions of 1958 dollars):								
Base solution	798. 1	814. 2	832. 7	837. 0	840. 2	844. 8	829. 3	825. 7
Budget balance with personal income tax	795. 9	806. 3	823. 0	827. 1	831. 8	837. 5	823. 1	820. 1
Budget balance with transfer payments	796. 3	807. 5	824. 2	828. 0	831. 9	836. 9	821. 9	818. 6
Budget balance with purchases of goods and services	790. 4	791. 7	815. 1	822. 1	829. 8	835. 5	822. 2	820. 2
Implicit deflator for GNP:								
Base solution	3. 40	4. 19	5. 68	7. 45	8. 42	8. 71	12. 67	9. 44
Budget balance with personal income tax	3. 57	4. 72	5. 95	7. 60	8. 42	8. 66	12. 69	9. 15
Budget balance with transfer payments	3. 49	4. 58	6. 27	7. 77	8. 53	8. 68	12. 76	9. 30
Budget balance with purchases of goods and services	2. 56	3. 21	7. 99	7. 44	8. 30	8. 02	12. 38	8. 64
Unemployment rate (percent):								
Base solution	5. 54	5. 24	4. 98	4. 85	4. 68	4. 66	5. 17	5. 14
Budget balance with personal income tax	5. 58	5. 39	5. 23	5. 17	5. 04	5. 05	5. 57	5. 56
Budget balance with transfer payments	5. 56	5. 33	5. 15	5. 08	4. 97	4. 99	5. 54	5. 55
Budget balance with purchases of goods and services	6. 46	7. 73	6. 45	6. 08	5. 46	5. 48	5. 85	5. 80
Change in policy variable required to achieve balanced budget:								
Change in personal income tax	+10. 6	+28. 7	+15. 0	+11. 0	+4. 3	+4. 2	+2. 2	+2. 2
Change in transfer payments	-12. 1	-32. 5	-16. 3	-11. 8	-4. 8	-5. 2	-3. 1	-3. 0
Change in purchases of goods and services <sup>1</sup>	-14. 7	-39. 4	-20. 0	-14. 6	-6. 0	-6. 4	-3. 8	-3. 7

<sup>1</sup> Change in Government purchases of goods and services has corresponding changes made in Government wage payments and Government employment.

Three years of adherence to a balanced budget policy during the recession period of 1969.3-1972.2 when base solution deficits were substantial worsens the income employment situation considerably. Real GNP is lower by \$28.5 billion, \$27.8 billion and \$44.4 billion using respectively policy tools of personal income tax, transfer payments and government purchases of goods and services. Compared to the base solution rate of 5.61 percent unemployment is 7.0 percent, 6.7 percent and 9.6 percent after balancing the budget using the three tools respectively. At the same time, the inflation situation is not changed significantly with a balanced budget.

The 1972-74 upswing generated fairly small deficits in the latter half of the period. Offsetting the deficits over this period reduces real GNP by \$7 billion in the worst case of the three simulations by the end of the period.

With regard to inflation, budget policy appears to have little impact in the model simulations. The econometric model solutions show little response of inflation rates to changes in budget policy; in fact in certain cases, the results may go in what may superficially appear to be the wrong direction. In some cases an increase in government spending, or a cut in taxes will actually tend to reduce the price level. This is a phenomenon which has often been noted in econometric simulations. It is not clear whether the response of price to cyclical changes in productivity, the source of this phenomenon, is quite as immediate in the real world as in the model. But it is clear that so long as budget policy is kept within reasonable limits, budget balance would not in itself greatly improve inflationary performance. This is not to say that during the 1960's a consistent policy of running surpluses might not have averted some of the inflation which occurred. We are saying only balancing the budget would not have greatly changed the situation.

The large differences in the impact of alternative policies used to achieve budget balance should be noted. Changes in taxes or transfer payments have relatively small real impact, whereas changes in government purchases of goods and services with their associated direct implication for employment have the greatest impact.<sup>1</sup> Three years of cuts in government purchases of goods and services and corresponding cuts in employment in an effort to balance the budget during the recessionary period of 1969.3-1972.2 would have brought real GNP down by \$44 billion in 1972.2, about \$16 billion more than that simulated using the other two balancing instruments.

Because of the higher multipliers and direct reduction in government employment, the swings in the unemployment rate are much higher with the policy of adjusting government purchase to achieve budgetary balance. Unemployment rates as low as 2.4 percent and as high as 10.0 percent are generated. The corresponding upper and lower limits are 7.0 percent and 3.6 percent when taxes are used to balance the budget and 6.7 percent and 3.6 percent when the balancing instrument is transfer payments. The base solution unemployment rate during this period lies between 3.3 percent and 6.0 percent.

This study suggests that a continued policy of budget balance would have tended to destabilize the economy in terms of real output and unemployment, during most of the periods considered. The limited times of budgetary surpluses were also times when economic activity was near the economy's capacity and when budget surpluses were required. It would be inadvisable to balance the budget at such times. In turn deficits correspond in large part (but not during 1966 to 1968) to periods when unemployment was undesirably high. At these times balancing the budget clearly worsens economic performance.

During 1966 to 1968, when a tax increase was clearly necessary, balancing the budget would have relieved some of the strains on labor markets, though perhaps too much so in 1967-68 if a policy of budget balance through cuts in purchases had been implemented.

With regard to inflation, the results are not nearly so clear. The impact of budget balancing on inflation is extremely small at least over the periods considered here. There are counter-intuitive results; in some cases, reducing the deficit increases prices. These effects are small but appear to reflect the nature of the price determination process and the definition of the price deflator. Prices involve elements from the cost side and from the productivity side. Reducing output frequently reduces productivity and that may cause upward pressure on prices even when output and employment are reduced. Moreover the definition of the price deflator, a current weighted price measure, sometimes means that mix changes will affect prices. A reasonable conclusion is only that over the periods observed balancing the budget would have had little price impact.

<sup>1</sup> The least impact on activity level would, of course, be if the balancing tool was corporate taxes since it has little immediate feedback into the system.