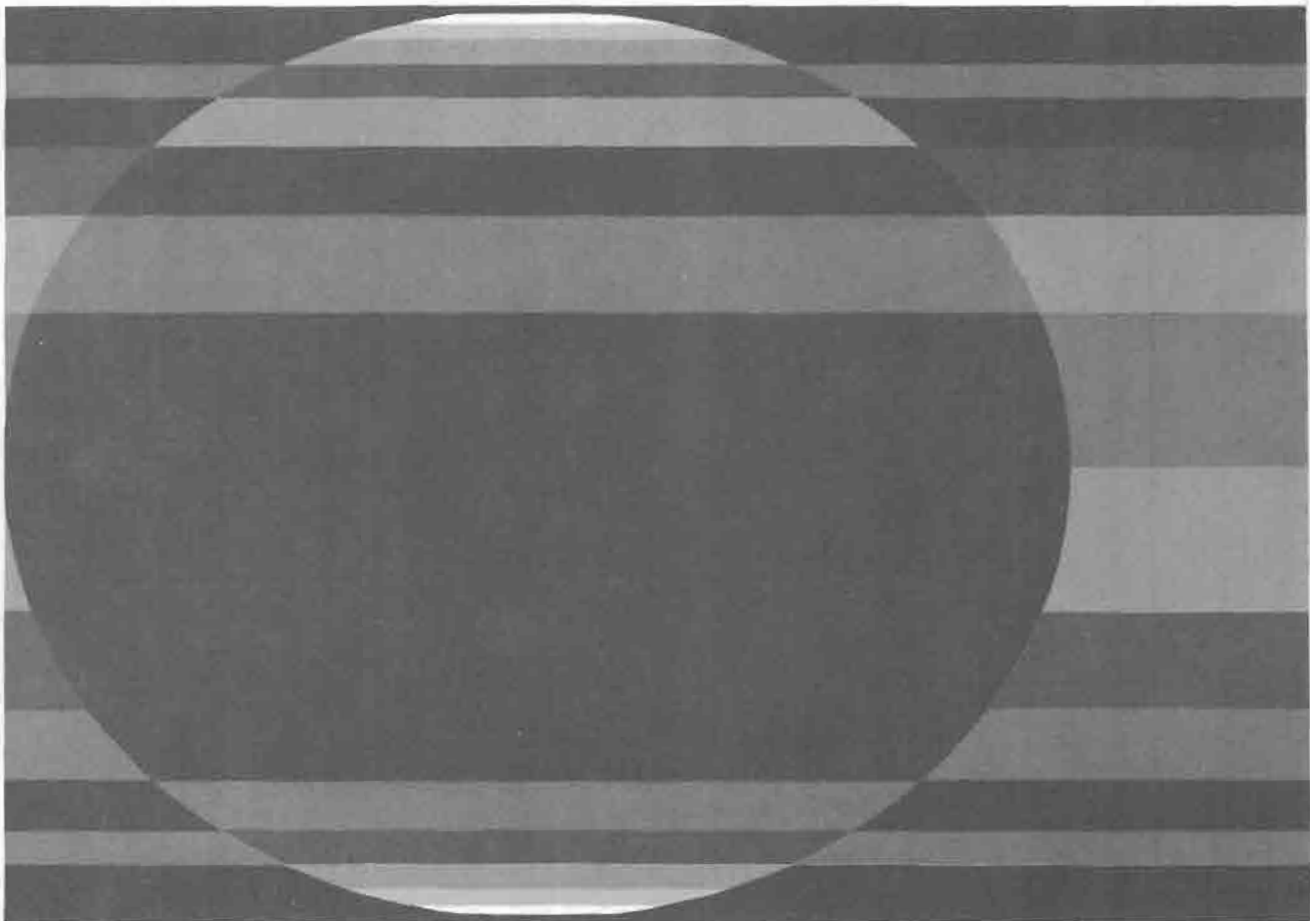


BACKGROUND PAPER

# **An Analysis of the Roth-Kemp Tax Cut Proposal**

File Copy

October 1978



Congress of the United States  
Congressional Budget Office  
Washington, D.C.

AN ANALYSIS OF THE  
ROTH-KEMP TAX CUT PROPOSAL

Congress of the United States  
Congressional Budget Office

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Washington, D.C. 20402



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## PREFACE

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This report analyzes the tax cut proposed by Senator Roth and Congressman Kemp (S. 1860 and H.R. 8333, respectively) which provides for large cuts in income taxes phased in over three years. The report analyzes the Roth-Kemp proposal as it stands. Although the bill itself does not include any provision for cuts in federal spending, many proponents of the bill favor reductions in spending as well. A brief discussion of the impact of tax cuts accompanied by spending reductions is included in the last chapter of this report.

The Congressional Budget Office prepared this study at the request of Senator Bellmon of the Senate Budget Committee. William Beeman and James Annable were the principal authors and supervised the study. Several members of CBO's Fiscal Analysis Division contributed to the report, including: Nariman Behraves, Gary Bortz, George Iden, Yolanda Kodryzcki, Cornelia Motheral, Marvin Phaup, Thyra Riley, Joan Schneider, and Stephen Zeller. Research assistance was provided by Antoinette Gibbons, John Jacobson, and Rebecca Summerville. The paper was typed by Debra Blagburn, Dorothy Kornegay, and Marsha Mottesheard. Robert L. Faherty and Marion F. Houstoun edited the manuscript.

In keeping with CBO's mandate to provide objective analysis, this report contains no recommendations.

Alice M. Rivlin  
Director

October 1978



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## CONTENTS

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|   | <u>Page</u> |
|---|-------------|
| PREFACE . . . . .   | iii         |
| SUMMARY . . . . .   | ix          |
| CHAPTER I. INTRODUCTION . . . . .   | 1           |
| CHAPTER II. THE RESPONSE OF AGGREGATE SUPPLY TO<br>LARGE TAX CUTS . . . . .   | 7           |
| Size of the Supply Response . . . . .   | 7           |
| The Response of Aggregate Supply to<br>Changed Incentives . . . . .   | 9           |
| Conclusion . . . . .  | 21          |
| CHAPTER III. AGGREGATE DEMAND AND ECONOMIC<br>GROWTH TARGETS . . . . .  | 23          |
| Capacity and Economic Trends . . . . .  | 24          |
| Expected Revenue Gains Because of the<br>Progressive Income Tax Structure and<br>Increases in Social Security Tax Rates . . . . . | 27          |
| The Problem of Commitment to Future<br>Tax Reductions: The Inflation Risk . . . . .   | 31          |
| Investment Spending . . . . .   | 35          |
| CHAPTER IV. ESTIMATES OF THE IMPACT OF ROTH-KEMP<br>TAX CUTS . . . . .  | 37          |
| The 1964 Tax Cut . . . . .  | 37          |
| Simulations With Three Macroeconomic<br>Models . . . . .  | 38          |
| The CBO Estimate . . . . .  | 43          |
| CHAPTER V. TAX REDUCTIONS ACCOMPANIED BY CUTS<br>IN SPENDING . . . . .  | 49          |
| Arguments for Spending Reductions . . . . .   | 49          |
| Conclusion . . . . .  | 54          |
| APPENDIX SUPPLY-SIDE MODELS . . . . .   | 57          |



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## TABLES

---

|   | <u>Page</u> |
|---|-------------|
| TABLE 1. INDIVIDUAL AND CORPORATE TAX REDUCTION UNDER THE ROTH-KEMP BILL, 1979-1983 . . . . .   | 2           |
| TABLE 2. INDIVIDUAL INCOME TAX REDUCTION UNDER THE ROTH-KEMP BILL, WHEN FULLY EFFECTIVE, BY INCOME CLASS AT 1978 INCOME LEVELS . . . . .                              | 3           |
| TABLE 3. DISTRIBUTION OF INDIVIDUAL INCOME TAX RETURNS, CLASSIFIED BY HIGHEST MARGINAL RATE AT WHICH TAX WAS COMPUTED, 1965 AND 1975 . . . . .                        | 10          |
| TABLE 4. ESTIMATES OF SUBSTITUTION AND INCOME EFFECTS ON LABOR SUPPLY OF ADULTS IN ALL INCOME GROUPS AND IN LOW-INCOME GROUPS--A SUMMARY OF RECENT RESEARCH . . . . . | 15          |
| TABLE 5. MEASURES OF LABOR-MARKET SLACK--UNEMPLOYMENT RATES OF VARIOUS GROUPS FOR SELECTED YEARS . .  | 25          |
| TABLE 6. MEASURES OF CAPACITY UTILIZATION FOR SELECTED YEARS . . . . .  | 26          |
| TABLE 7. ADDITIONAL REVENUES BECAUSE OF INCOME TAX PROGRESSIVITY, FISCAL YEARS 1979-1983 . . . . .  | 28          |
| TABLE 8. ADDITIONAL REVENUES BECAUSE OF SOCIAL SECURITY TAX INCREASES, FISCAL YEARS 1979-1983 . . . . .   | 31          |
| TABLE 9. ALTERNATIVE PROJECTIONS OF THE ECONOMY WITHOUT THE ROTH-KEMP TAX CUTS, CALENDAR YEARS 1979-1983 . . . . .  | 41          |
| TABLE 10. ALTERNATIVE ESTIMATES OF THE INCREMENTAL EFFECT OF THE ROTH-KEMP TAX CUTS, CALENDAR YEARS 1979-1983 . . . . .   | 42          |
| TABLE 11. ALTERNATIVE ESTIMATES OF TAX REFLows AS A PERCENT OF GROSS REVENUE LOSS, CALENDAR YEARS 1979-1983 . . . . .   | 43          |



---

TABLES (cont.)

---

|  | <u>Page</u> |
|--|-------------|
| TABLE 12. ESTIMATED INCREMENTAL ECONOMIC IMPACT OF<br>ROTH-KEMP TAX CUTS, FISCAL YEARS 1979-1983. .  | 45          |
| TABLE 13. EFFECTIVE TAX RATES FOR INDIVIDUALS FOR<br>SELECTED YEARS AND UNDER THE ROTH-KEMP<br>PROPOSAL . . . . .  | 50          |
| TABLE 14. SPENDING AND TRANSFER REDUCTIONS SUFFICIENT<br>TO OFFSET FULLY THE IMPACT OF THE ROTH-KEMP<br>PROPOSAL ON THE RATE OF INFLATION (CPI) AND<br>ON THE FEDERAL GOVERNMENT DEFICIT . . . . . | 52          |
| TABLE 15. PROJECTIONS OF FEDERAL SPENDING AND CURRENT<br>DOLLAR GNP UNDER THE ROTH-KEMP PROPOSAL, WITH<br>ALTERNATIVE SPENDING ASSUMPTIONS, FISCAL<br>YEARS 1979-1983 . . . . .                    | 53          |
| TABLE 16. NET INCREMENTAL IMPACT OF HALF THE SPENDING<br>REDUCTIONS NEEDED TO OFFSET FULLY THE IMPACT<br>OF THE ROTH-KEMP PROPOSAL ON THE RATE OF<br>INFLATION (CPI), FISCAL YEARS 1979-1983 . . . | 55          |

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FIGURE

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|   |    |
|---|----|
| FIGURE 1. LOW UNEMPLOYMENT AND WAGE INFLATION . . . . . | 33 |
|---|----|

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## SUMMARY

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### THE ROTH-KEMP TAX REDUCTION PROPOSAL

The major provisions of the "Tax Reduction Act of 1978" (S. 1860 and H.R. 8333; the Roth-Kemp bill) are:

- o A one-third cut in personal income tax rates, to be phased in over three years;
- o A 3 percentage point cut in the corporate income tax rate, from 48 to 45 percent, likewise phased in over a three-year period; and
- o An increase in the corporate surtax exemption, from \$50,000 to \$100,000.

The Roth-Kemp proposal represents a commitment to a very large tax cut over a period of three years. <sup>1/</sup> Although the bill itself does not include any provision to reduce federal spending, many proponents of the bill favor such a reduction.

### THE ESTIMATED IMPACT OF ROTH-KEMP ON THE ECONOMY

A key feature of the Roth-Kemp bill is the commitment to a succession of large tax cuts, despite the uncertainty about the future strength of the economy. Estimates of the economic impact of these tax cuts depend, to a large extent, on the assumed strength of the economy over the next five years without the tax reduction. If the economy is strong, the added stimulus of the Roth-Kemp tax cuts could be highly inflationary; however, if the economy weakens, large tax cuts may be needed to maintain economic growth.

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<sup>1/</sup> The Roth-Kemp tax cuts would average more than 4 percent of Gross National Product (GNP) in 1982, the first full year after the last cut goes into effect. By contrast, the large Kennedy-Johnson tax cuts enacted in 1964 were about 2.2 percent of GNP in 1965.

CBO's assessment of the impact of Roth-Kemp is based on the five-year economic projection adopted by the Senate and House Budget Committees. Given that projection, it is estimated that the proposed tax cuts would provide a large stimulus to economic activity, although this effect would begin to wane by the end of the five-year period (see Summary Table 1). By 1982, the unemployment rate would be 1.5 percentage points below its level without the tax cut. These gains, however, would be won at the cost of a substantial increase in the deficit and much higher inflation. The sharp rise in aggregate demand would strain the total productive capacity of the nation, with the unemployment rate falling well below the 1973 boom level and production bottlenecks becoming widespread. By fiscal year 1983, consumer prices would be rising at an estimated rate 2.7 percentage points faster than without the tax cut. Moreover, given the difficulty of achieving a 4 percent unemployment rate because of demographic and structural changes that have occurred in the labor market, this estimate of inflation may be too low. In fiscal year 1983, the federal revenue loss from the proposed tax cuts, after netting out revenue reflows

SUMMARY TABLE 1. INCREMENTAL ECONOMIC IMPACT OF THE ROTH-KEMP TAX CUTS, FISCAL YEARS 1979-1983

|   | 1979 | 1980 | 1981 | 1982 | 1983 |
|---|------|------|------|------|------|
| Constant Dollar GNP<br>Growth Rate<br>(percentage points) | 1.0  | 1.8  | 1.2  | -0.2 | -1.1 |
| Inflation Rate<br>CPI (percentage points) <u>b/</u>       | 0.1  | 0.2  | 1.0  | 1.7  | 2.7  |
| Unemployment Rate<br>(percentage points)                  | -0.1 | -0.5 | -1.2 | -1.5 | -1.3 |
| Net Budget Cost<br>(billions of dollars)                  | 16.0 | 38.4 | 64.4 | 74.8 | 79.1 |

a/ Difference from baseline projection.

b/ Fourth quarter to fourth quarter of fiscal years.

(the increase resulting from greater economic activity and inflation), is estimated to be nearly \$80 billion. Moreover, inflation rather than real growth generates the largest part of the revenue reflows.

Roth-Kemp With Spending Cuts. The impact of the Roth-Kemp proposal on inflation could be offset by reductions in federal spending below the level that would exist if current policies were continued. Some advocates of reduced federal spending argue that the only way to achieve a major reduction in outlays is to commit future growth in receipts to tax cuts. Otherwise, the growth in receipts would be absorbed by increased spending. Indeed, some proponents of Roth-Kemp have based their support on the assumption that the proposed tax cuts would lead to large reductions in federal spending. Others have proposed that an equally large tax cut be phased in over a longer period and accompanied by reductions in spending.

#### THE CASE FOR ROTH-KEMP WITHOUT SPENDING CUTS

Some who favor the Roth-Kemp bill reject the conventional economic analysis that such tax reductions, without corresponding cuts in spending, are likely to be inflationary. Their reasoning is typically based on two arguments:

- o Large tax cuts are needed to offset the depressing effects of the rising tax burden that results from a progressive tax structure when combined with inflation and productivity growth;
- o Lower marginal tax rates would induce large increases in hours worked, saving, and investment, causing total productive capacity to expand sufficiently to absorb the additional demand without inflationary bottlenecks.

#### Tax Revenue Growth

In the absence of changes in tax legislation, the growth in federal income tax revenues generally exceeds the growth in income. This gap results from the progressive structure of the income tax system; when money incomes rise, as a result of productivity growth and inflation, they are taxed at higher rates, causing a drag on the increase of disposable income. This dampening of the increase

tends to slow total spending, which can lead to higher unemployment and underutilized plant and equipment, as well as to some moderation in the rate of inflation.

Projections of the amount of revenue growth arising from automatic increases in tax rates depend both upon the growth in money income and the assumed response of tax rates to that growth. CBO's estimates of the expected automatic tax revenue gains for fiscal years 1979 through 1983 are presented in Summary Table 2. As can be seen, the increased revenue would reach \$37 billion by 1981, the year of the last proposed tax rate reduction. Although estimates of revenue loss resulting from the Roth-Kemp tax reductions vary, all show that the proposed tax cuts are much larger than the expected increases in revenues resulting from the progressive tax structure. <sup>2/</sup>

SUMMARY TABLE 2. ESTIMATED AUTOMATIC REVENUE GAINS RESULTING FROM INCOME TAX PROGRESSIVITY, FISCAL YEARS 1979-1983: IN BILLIONS OF DOLLARS

|                        | 1979 | 1980 | 1981 | 1982 | 1983 |
|------------------------|------|------|------|------|------|
| Total Revenue Gains    | 10.1 | 21.9 | 36.9 | 55.3 | 77.8 |
| Because of real growth | 3.8  | 7.9  | 15.4 | 23.5 | 32.8 |
| Because of inflation   | 6.3  | 14.0 | 21.5 | 31.8 | 45.0 |

NOTE: It is assumed that equal amounts of real growth and inflation generate equal amounts of revenue.

<sup>2/</sup> Using a tax model incorporating 50,000 representative returns, the Roth-Kemp personal tax cuts are estimated to total about \$98 billion by 1981 and \$165 billion by 1983.

## Increased Supply

Some argue that the existing marginal tax rates have so depressed incentives to work, save, and invest that a one-third cut in tax rates would sharply increase the level of total economic activity, perhaps by enough to make the tax reductions self-financing. This issue of the labor and saving response to changed marginal tax rates is at the center of the debate about the effects of the Roth-Kemp proposal. If individuals responded to increased after-tax earnings by working significantly more hours and by saving a significantly larger share of their income, then the tax cuts would lead to greater real growth, more productive capacity, and less inflation. On the other hand, if individuals did not work significantly more hours or significantly increase their saving, the result might well be spending increases in excess of the growth in total capacity, leading to rapidly rising prices.

It is estimated that Roth-Kemp will increase both the after-tax wage rate and the rate of return on saving by about 10 percent. If the Roth-Kemp tax cuts are to be self-financing, a 10 percent rise in after-tax wages must lead to a greater than 10 percent increase in the total number of hours worked. For example, a single-earner family with an after-tax weekly income of \$200 would receive an additional \$20. On average, out of 100 such families, the change must lead more than 10 previously not employed persons to take full-time jobs, or lead existing earners to work more than 10 percent longer hours. Similarly, a 10 percent rise in the after-tax rate of return on savings must lead to more than a 10 percent increase in saving.

The evidence indicates that this large a response to the proposed tax cuts is most unlikely:

- o Most studies of the labor response to changes in spendable earnings have focused on the behavior of adult men and have found little or no relationship between changes in taxation and number of hours worked. Women, however, appear to be more sensitive to variations in marginal tax rates. For the labor force as a whole, a 10 percent increase in the disposable wage may lead to a 1 to 3 percent increase in hours worked--well below the more than 10 percent response needed for the tax cuts to be self-financing.

- o Most studies of the rate of interest and personal saving show either a very slight relationship or none at all. No study reports a saving response large enough to make the Roth-Kemp tax cuts self-financing.

One shortcoming of these empirical studies is that the Roth-Kemp tax reductions are themselves larger than previously experienced; these findings may therefore underestimate the supply response. But even if there were a sharp increase in total number of hours worked and in saving, it is not reasonable to assume that total productive capacity would increase quickly. Total demand can increase rapidly in response to tax cuts. But major capital projects take years to plan, design, finance, and put in place. Thus, even with a large labor and savings response, the Roth-Kemp tax reductions would still risk widespread capacity shortages and an acceleration of inflation, because the increase in total demand is unlikely to be matched quickly by a corresponding increase in plant and equipment.

#### CONCLUSION

The Roth-Kemp bill involves a considerable risk of accelerating inflation. The factors giving rise to this risk are:

- o The bill requires a commitment to large tax cuts over the next three years, without a similar commitment to constraints on spending; and
- o Yet, the outlook for the strength of the economy during this period is uncertain.

If the economy weakens substantially, tax cuts of the size proposed in the Roth-Kemp bill might be appropriate in order to achieve full employment. If nonfederal demands during the next three years are strong, however, a one-third reduction in tax rates--without a corresponding cut in spending--would fuel a sharp increase in total private spending, lead to labor scarcities and other production bottlenecks, and result in a significant acceleration of inflation.

Although there is widespread support for a tax cut in 1979, the Congress has received sharply conflicting advice concerning the specific nature of a tax reduction. A major issue is whether the Congress should enact a one-time tax cut and await further economic developments before considering another reduction, or whether it should commit itself now to a series of large tax cuts over several years. The latter course is proposed in the "Tax Reduction Act of 1978" (S. 1860 and H.R. 8333; the Roth-Kemp bill).

The major provisions of this bill are as follows:

- o A one-third cut in personal income tax rates, to be phased in over three years; 1/
- o A 3 percentage point cut in the corporate tax rate, from 48 to 45 percent, also phased in over three years; and
- o An increase in the corporate surtax exemption, from \$50,000 to \$100,000.

The direct revenue loss from the tax cut before feedback--that is, excluding the increased revenues stemming from new taxable activity stimulated by the cut--is estimated to exceed \$120 billion when fully effective in 1981, with more than 90 percent of the loss in personal tax revenues (see Table 1). The personal income tax cut would be substantial for all income classes; nevertheless, the percentage reduction would be largest for those in lower income brackets, thereby increasing the progressivity of the personal income tax structure (see Table 2). Effective personal income tax rates, which would rise in the absence of a tax cut, would be reduced to levels that prevailed in the early 1960s. In fact, the Roth-Kemp tax reduction would approximately offset the combined

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1/ The CBO analysis assumes that the first cut would be effective January 1979.



TABLE 1. INDIVIDUAL AND CORPORATE TAX REDUCTION UNDER THE ROTH-KEMP BILL, 1979-1983: IN BILLIONS OF DOLLARS a/

|               | 1979       | 1980       | 1981       | 1982        | 1983        |
|---------------|------------|------------|------------|-------------|-------------|
| <hr/>         |            |            |            |             |             |
| Calendar Year |            |            |            |             |             |
| Individual    | 27.4       | 63.8       | 112.3      | 134.7       | 161.7       |
| Corporate     | <u>4.0</u> | <u>6.6</u> | <u>9.6</u> | <u>10.5</u> | <u>11.5</u> |
| Total         | 31.4       | 70.4       | 121.9      | 145.2       | 173.2       |
| Fiscal Year   |            |            |            |             |             |
| Individual    | 19.2       | 52.8       | 97.7       | 128.0       | 153.6       |
| Corporate     | <u>1.8</u> | <u>5.2</u> | <u>8.0</u> | <u>10.1</u> | <u>11.0</u> |
| Total         | 21.0       | 58.0       | 105.7      | 138.1       | 164.6       |
| <hr/>         |            |            |            |             |             |

SOURCE: Joint Committee on Taxation.

a/ Assuming a January 1, 1979, effective date and change in withholding. Compared with present law, assuming the extension of expiring tax cuts.

increases in personal income and social security tax rates that have occurred since 1970. 2/ The corporate tax rate reduction would be much smaller. When the cut is fully phased in, the effective tax rates on corporate income would be reduced by about 9 percent.

Although many supporters of a large tax cut favor a concomitant cut in spending, the Roth-Kemp proposal does not provide for any reduction in spending. In fact, some advocates of the bill assert that its objectives can be achieved without a cut in spending.

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2/ See Table 13 in Chapter V.

TABLE 2. INDIVIDUAL INCOME TAX REDUCTION UNDER THE ROTH-KEMP BILL, WHEN FULLY EFFECTIVE, BY INCOME CLASS AT 1978 INCOME LEVELS a/

| Expanded Income Class <u>b/</u> | Amount of Reduction (millions of dollars) | Reduction as a Percent of Present Tax | Percentage Distribution |
|---------------------------------|---|---------------------------------------|-------------------------|
| 0 to \$5,000                    | 312                                       | 54                                    | <u>c/</u><br><u>6</u>   |
| \$5,000 to \$10,000             | 3,902                                     | 46                                    | 11                      |
| \$10,000 to \$15,000            | 6,946                                     | 41                                    | 14                      |
| \$15,000 to \$20,000            | 9,019                                     | 37                                    | 25                      |
| \$20,000 to \$30,000            | 15,944                                    | 36                                    | 21                      |
| \$30,000 to \$50,000            | 13,638                                    | 35                                    | 12                      |
| \$50,000 to \$100,000           | 8,034                                     | 33                                    | <u>11</u>               |
| \$100,000 and more              | <u>7,182</u>                              | <u>27</u>                             |                         |
| Total                           | 64,977 <u>d/</u>                          | 35                                    | 100                     |

SOURCE: Joint Committee on Taxation.

a/ Compared with present law, which contains the temporary general tax credit and earned income credit.

b/ Expanded income equals adjusted gross income plus minimum tax preferences less investment interest to the extent of investment income.

c/ Less than 0.5 percent.

d/ Total cost is less than that shown in Table 1 because of different income assumptions.

Three major arguments have been put forward by advocates of the Roth-Kemp tax cuts:

- o Some contend that a substantial reduction in marginal tax rates would increase incentives to work, save, and invest, which would provide such a large boost to production and income that the tax cut would not increase the federal deficit. Further, the effects on aggregate supply would be so large that the tax cut would not be inflationary.
- o A second group argues that the underlying strength of the economy is not sufficient to sustain economic growth and close the gap between actual and potential capacity, particularly in view of the upcoming increases in tax rates arising from earlier social security legislation and the combination of rising incomes and the progressive personal income tax system. According to this view, the tax cuts included in the First Concurrent Resolution on the Budget for Fiscal Year 1979 were not large enough to achieve growth at the rates advocated by the Administration and the Congress.
- o Finally, some advocates of reduced federal spending argue that the only way to achieve a major reduction in outlays is to commit future growth in receipts to tax cuts. Otherwise, it is argued, the growth in receipts would be absorbed by increased spending, and tax rates would continue to rise.

The Roth-Kemp tax cuts would be the largest tax cut within a three-year period that has been enacted in recent history, and it would significantly alter overall economic activity for many years to come. Each argument given in support of the proposal should therefore be considered carefully.

Chapter II examines the theoretical and empirical bases for the increased incentives argument. The second case for a large tax cut--that it is needed to achieve some economic growth targets--turns on questions regarding underlying strength of nonfederal demands and the effect of the Roth-Kemp tax cuts on aggregate demand. These issues are analyzed in Chapter III. Chapter IV examines alternative estimates of the economic impact of Roth-Kemp and describes the sources of uncertainty in such estimates.

The last argument for the tax cuts--fundamentally an argument for a relatively smaller public sector--is an issue that can only be resolved politically. Although resolution of this issue is beyond the scope of economics, there is a significant risk in attempting to reduce federal spending by committing future revenues to tax cuts rather than by legislating a reduction in spending. For example, one possible outcome of this strategy would be that, despite the reduction in taxes, spending would not be reduced, and the federal deficit would be greatly enlarged. If this occurred when labor and capital were fully employed, the effect would be accelerating inflation. Thus, some support a large tax cut, perhaps phased in over a longer period, provided it is accompanied by a reduction in spending. In Chapter V, the economic impact of this option of combining tax cuts and spending reductions is examined.



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## CHAPTER II. THE RESPONSE OF AGGREGATE SUPPLY TO LARGE TAX CUTS

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The Roth-Kemp tax reductions would change the incentives to work, save, and invest. Some supporters of the bill have argued that this change would substantially increase the productive capacity of the nation. If so, it could sharply increase economic growth without aggravating inflation.

This argument deserves careful consideration. Certainly, if policymakers could be reasonably sure that the Roth-Kemp tax reductions would lead to large increases in labor and capital, the proposal would make good economic sense, even in an economy nearing full-capacity production. <sup>1/</sup> The central issue, then, is whether a sufficiently large supply response would indeed occur.

This chapter reviews the available evidence on the supply reaction to changed incentives. The review indicates that the resulting changes in work effort and saving would fail--by a considerable margin--to change the conclusion of conventional economic analysis about Roth-Kemp. Briefly, if nonfederal demand is strong during the next few years, the commitment to such large tax cuts--without a similar commitment to corresponding constraints on federal spending--would risk a substantial acceleration in inflation as the economy encounters labor shortages, production bottlenecks, and other capacity limitations. And recent experience has shown how difficult it is to rid the economy of an inflationary momentum once it has begun. (This analysis is presented in some detail in Chapter III.)

### SIZE OF THE SUPPLY RESPONSE

This section briefly examines the size of the labor and saving response needed to enable the Roth-Kemp reductions in tax rates to be self-financing. Available evidence on the supply response to changed price incentives will then be reviewed.

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<sup>1/</sup> As used here, full capacity means the full utilization of available resources at existing relative prices.

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In order for the proposed tax cuts to pay for themselves, their impact on the economy would have to be so strong that the tax revenues resulting from the increased economic activity would at least equal the original revenue loss. It is estimated that the Roth-Kemp tax cuts would reduce federal revenues by roughly \$105 billion by fiscal year 1981. <sup>2/</sup> With the fully effective Roth-Kemp tax rates, federal revenues would rise roughly 20 cents for each 1 dollar increase in the Gross National Product (GNP). <sup>3/</sup> Therefore, total national output would need to rise by about \$525 billion--five times the gross revenue loss--in order for the tax cuts to be self-financing. This would be about a 20 percent addition to the level of GNP expected by 1981.

Part of this 20 percent increment to total production could result from reductions in the levels of unemployment and underutilized capital stock in the economy. As will be shown in Chapter III, there is some slack in the economy today, but not a large amount. Estimates provided by the Council of Economic Advisers (CEA) indicate that actual output is currently about 4 to 5 percent below potential production. <sup>4/</sup> If the same degree of excess capacity were to exist in 1981, then GNP could expand by no more than an additional 5 percent before encountering severe production bottlenecks and rapidly accelerating inflation--unless productive capacity increased as well.

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- <sup>2/</sup> The estimate is provided by the Joint Economic Committee on Taxation. For a discussion of the gross revenue loss of the Roth-Kemp proposal, see Chapter IV.
- <sup>3/</sup> Inflation and real growth generated by increased demand resulting from the tax cuts may cause the effective tax rate to rise. This effect is ignored in order to focus on the issue of supply response.
- <sup>4/</sup> The CEA uses 4.9 percent unemployment to calculate potential GNP. Many economists believe that the unemployment rate at which inflation accelerates is higher than 4.9 percent; as a result, they believe that the Council overstates the true gap between actual and potential production. If a higher unemployment figure is used, the results are less favorable to Roth-Kemp.

Setting aside the problem of inflation, eliminating the current level of economic slack may increase GNP by as much as 5 percent. Since a 20 percent increase in GNP attributable to the tax cuts is necessary for Roth-Kemp to be self-financing, a 15 percent increase in total production must result from a greater supply of production factors--labor and capital--induced by the changed incentives. This is a very large response to tax cuts that are estimated to increase disposable earnings 4 to 5 percent on average and 8 to 10 percent at the margin.

Even under the generous assumptions of constant capital-output and labor-output ratios, a 15 percent rise in GNP would require large increases in labor supply and personal saving. <sup>5/</sup> A 10 percent increase in the marginal after-tax real wage for workers would have to result in more than a 10 percent increase in labor supply. Similarly, a 10 percent increase in the marginal after-tax real rate of return must induce greater than a 10 percent rise in personal saving. As will be discussed in the remainder of this chapter, such reactions are much higher than any estimates of the actual responses of either labor or saving to changed wage or interest rate incentives.

#### THE RESPONSE OF AGGREGATE SUPPLY TO CHANGED INCENTIVES

Taxpayers have been subject to higher marginal tax rates since the mid-1960s. Table 3 presents the distribution of personal income tax returns by tax bracket for 1965 and 1975. These two years are used because 1965 is the year in which the last general reduction of marginal tax rates occurred, while 1975 is the most recent year for which data are available. It can be seen, for example, that fewer than one-fifth of all taxpayers had a marginal

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<sup>5/</sup> These assumptions are quite generous. The available evidence on production processes indicates that the response of labor supply and saving--especially saving--would have to be significantly greater than suggested in the text in order for real GNP to rise by 15 percent. For empirical estimates of labor-output and capital-output elasticities, see George H. Hildebrand and Ta-Chung Liu, Manufacturing Production Functions in the United States, 1957 (Cornell University Press, 1965).



TABLE 3. DISTRIBUTION OF INDIVIDUAL INCOME TAX RETURNS, CLASSIFIED BY HIGHEST MARGINAL RATE AT WHICH TAX WAS COMPUTED, 1965 AND 1975 a/

| Tax Bracket      | 1965                           |                    | 1975                           |                    |
|------------------|--------------------------------|--------------------|--------------------------------|--------------------|
|                  | Percent of all taxable returns | Cumulative percent | Percent of all taxable returns | Cumulative percent |
| 14 Percent       | 12.3                           | 12.3               | 6.6                            | 6.6                |
| 15 Percent       | 11.2                           | 23.5               | 5.2                            | 11.8               |
| 16 Percent       | 11.7                           | 35.2               | 6.1                            | 17.9               |
| 17 to 18 Percent | 12.6                           | 47.8               | 6.7                            | 24.6               |
| 19 to 20 Percent | 33.4                           | 81.2               | 22.2                           | 46.8               |
| 21 to 24 Percent | 11.9                           | 93.1               | 24.2                           | 71.0               |
| 25 to 29 Percent | 4.9                            | 98.0               | 20.3                           | 91.3               |
| 30 to 39 Percent | 1.0                            | 99.0               | 6.3                            | 97.6               |
| 40 to 49 Percent | 0.4                            | 99.4               | 1.3                            | 98.9               |
| 50 to 59 Percent | 0.5                            | 99.9               | 0.9                            | 99.8               |
| 60 to 69 Percent | 0.1                            | 100.0              | 0.3                            | 100.0              |

SOURCE: Donald Kiefer, Library of Congress, and Department of the Treasury Internal Revenue Service, Statistics of Income, Individual Tax Returns (1965, 1975).

a/ The data in this table are for returns with taxable income.

rate greater than 20 percent in 1965, as compared with more than half of all taxpayers a decade later.

This movement into higher marginal tax brackets has altered the distribution of the tax burden. It cannot be concluded, however, from Table 3 alone that real economic growth has been adversely affected. The impact of changed marginal tax rates on the expansion of productive capacity depends on the response of individuals to changes in marginal rewards.

The effect of changed incentives on total productive capacity under the Roth-Kemp proposal would work through three major channels, each of which is examined below:

- o Increased take-home pay may make work more attractive relative to leisure, resulting in a larger supply of labor;
- o Increased return on capital may make saving more attractive relative to consumption and may increase the rate of investment; and
- o Lower tax rates may reduce tax avoidance through illegal activities or tax shelters.

#### Labor Supply and Tax Incentives

A higher take-home wage would increase labor supply if most persons responded by desiring to work more hours for pay or profit. On the other hand, if the increase in disposable income--which would enable workers to maintain customary living standards with fewer hours worked--led most workers to increase their leisure activities at the expense of work, the supply of labor would decrease.

Both types of response are limited by institutional arrangements governing the length of the workweek. Most wage earners have little discretion over the number of hours they work, since this is set by their employers. As a result, much of the labor-supply

response to a changed take-home wage probably operates through variations in the labor-force participation rate. In addition, discretionary overtime and "moonlighting" provide some opportunities for varying the amount of time on the job. Self-employed persons probably find it easiest to vary the number of hours they work.

Evidence. Four types of evidence are available on the labor-supply response to changing wage incentives:

- o The historical record on previous large personal income tax cuts,
- o Surveys of professional and high-income persons,
- o Econometric analysis of the available data, and
- o Income-support experiments.

Two recent episodes provide a historical record of the effects on labor supply of changes in marginal tax rates. In 1964 and 1965, marginal tax rates were reduced by 20 to 30 percent. Later, effective in 1972, the maximum tax on labor earnings was lowered from 71 to 50 percent. In neither of these cases is there evidence of an unusual increase in the supply of labor.

A number of surveys of professional and high-income persons have examined the effects of high marginal tax rates on hours of work. For example, a study of British accountants and solicitors (lawyers) found that there were almost as many respondents who felt that the high marginal tax--a greater than 90 percent maximum rate on earned income, as compared with the current 50 percent maximum in the United States--led them to work longer hours, in order to achieve their disposable income goals, as there were respondents who felt that the high tax led them to work fewer hours. 6/ A later study, also of British accountants and solicitors, found

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6/ George F. Break, "Income Taxes and Incentives to Work," American Economic Review, vol. 47 (1957), pp. 529-49, as cited in Theoretical and Empirical Aspects of the Effects of Taxation on the Supply of Labor (Paris: Organization of Economic Cooperation and Development, 1975) pp. 36-37.

stronger indications that high tax rates might reduce overall hours, but the net reduction was still quite small. 7/ A 1964 survey of high-income individuals in the United States concluded that about 6 percent of all members of high-income groups "plausibly" reported a work disincentive as a result of high marginal tax rates. 8/ In each of these studies, the evidence of disincentives from high tax rates was stronger for individuals with very high incomes and for the self-employed than for others in the sample.

In general, the available survey evidence suggests that, although high-income professionals and the self-employed may reduce their labor supply as a result of high marginal tax rates, the net reduction in hours worked is quite small. Without exception, such surveys have found no indication of a major reduction in labor supply of professional and high-income persons as a result of income tax disincentives, even though many of the studies were conducted in Britain, where the marginal income tax rates are considerably higher than in the United States. Furthermore, since the maximum tax on earnings would remain at 50 percent under the Roth-Kemp proposal, there would be no impact on the labor supply of groups in the highest income tax bracket.

Most estimates of the impact of changing tax rates on labor supply are derived from the econometric analysis of the available data. These studies may be divided into two groups: those on broad demographic subgroups of the population cumulatively covering all income groups and those on low-income groups.

It is generally agreed that the labor supply of all adult males is largely unaffected by changes in marginal tax rates. In most studies, both the substitution and the income effects are

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7/ D. B. Fields and W. T. Stambury, "Income Taxes and Incentives to Work: Some Additional Empirical Evidence," American Economic Review, vol. 61 (1971), pp. 435-43, as cited in Theoretical and Empirical Aspects, pp. 46-48.

8/ James N. Morgan and others, "A Survey of Investment Management and Working Behavior Among High-Income Individuals," American Economic Review, vol. 55 (1965).

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very close to zero. There is a much larger range of uncertainty about the labor-supply response of all adult women to changes in the take-home wage. The weight of the available evidence, however, indicates that changes in the take-home wage do have a significant impact on the labor-supply decisions of married women. For this demographic group, a lowering of marginal tax rates, all other things remaining the same, appears to lead to a greater number of hours worked. <sup>9/</sup>

The results of the negative income tax (N.I.T.) experiments, which have been cited frequently as providing evidence on the labor-supply response to variations in work incentives, are summarized in the estimates given in Table 4 for low-income groups. As can be seen, there is substantial uncertainty regarding the response of low-income persons to changed wage rates; nevertheless, the evidence suggests that the net effect is relatively small. In any case, the relevance of these findings to the labor-supply response from the Roth-Kemp tax reductions is limited. Low-income persons would be relatively unaffected by the Roth-Kemp changes because their income is taxed little under the federal income tax system.

The overall impact. After reviewing the available empirical evidence, CBO's best estimate is that hours worked would increase if after-tax real wages went up, largely because of the reaction of married women. The total net response, however, appears relatively small. Perhaps a 1 to 3 percent increase in the labor supply would result from a 10 percent rise in the disposable wage. As was noted above, however, more than a 10 percent increase in labor supply would be necessary for Roth-Kemp to be self-financing.

#### Saving and Tax Incentives

An increase in saving would follow a marginal tax cut if most people responded to the opportunity for higher future returns by

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<sup>9/</sup> See, for example, Jane H. Leuthold, "The Effects of Taxation on the Hours Worked by Married Women," Industrial and Labor Relations Review, vol. 31 (July 1978), p. 524.

TABLE 4. ESTIMATES OF SUBSTITUTION AND INCOME EFFECTS ON LABOR SUPPLY OF ADULTS IN ALL INCOME GROUPS AND IN LOW-INCOME GROUPS--A SUMMARY OF RECENT RESEARCH

| Population Group  | Range of Substitution Elasticities <u>a/</u> | Range of Income Elasticities <u>b/</u> |
|-------------------|--|--|
| All Income Groups |  |  |
| Adult males       | 0 to 0.1                                     | 0 to -0.3                              |
| Adult females     | 0.1 to 2.5                                   | -0.1 to -2.1                           |
| Low-Income Groups |  |  |
| Adult males       | 0.2 to 0.9                                   | -0.1 to -0.9                           |
| Adult females     | 0.1 to 0.8                                   | -0.1 to -1.0                           |

a/ The "substitution elasticity" is a measure of the responsiveness in the quantity of labor supplied to a small change in the wage rate after taxes, with the level of the person's income assumed constant. Roughly, it indicates the percent change in labor supply for a 1 percent change in wage rates, holding income levels constant.

b/ The "income elasticity" is a measure of the responsiveness in the quantity of labor supplied to a small change in real (after-tax) incomes. Roughly, it indicates the percent change in labor supply for a 1 percent change in real incomes.

SOURCES:

Orley Ashenfelter, and James Hickman, "Estimating Labor-Supply Functions," in Glen G. Cain and Harold W. Watts, eds., Income Maintenance and Labor Supply (Academic Press, 1973).

Michael J. Boskin, "The Economics of Labor Supply," in Income Maintenance and Labor Supply.

Glen G. Cain and Harold W. Watts, "Toward a Synthesis of the Evidence," in Income Maintenance and Labor Supply.

TABLE 4. (Continued)

- Malcolm S. Cohen, Samuel A. Rea, Jr., and Robert I. Lerman, A Micro Model of Labor Supply, Bureau of Labor Statistics Staff Paper No.4 (1970).
- Irwin Garfinkel, "On Estimating the Labor-Supply Effects of a Negative Income Tax," in Income Maintenance and Labor Supply.
- David Greenberg and Marvin Kosters, "Income Guarantees and the Working Poor: The Effect of Income-Maintenance Programs on the Hours of Work of Male Family Heads," in Income Maintenance and Labor Supply.
- C. Russell Hill, "The Determinants of Labor Supply for the Working Urban Poor," in Income Maintenance and Labor Supply.
- Edward S. Kalachek and Fredric Q. Raines, "Labor Supply of Low Income Workers," in The President's Commission on Income Maintenance Programs (1970).
- Michael C. Keeley and others, The Labor Supply Effects and Costs of Alternative Negative Income Tax Programs: Evidence from the Seattle and Denver Income Maintenance Experiments (Menlo Park, California: Stanford Research Institute, May 1977).
- Marvin Kosters, "Effects of an Income Tax on Labor Supply," in Arnold C. Harbenger and Martin J. Bailey, eds., The Taxation of Income From Capital (The Brookings Institution, 1969).
- Jane H. Leuthold, "The Effects of Taxation on the Hours Worked by Married Women," Industrial and Labor Relations Review, vol. 31 (July 1978), pp. 520-26.
- Organization for Economic Cooperation and Development, Theoretical and Empirical Aspects of the Effects of Taxation on the Supply of Labor (Paris: OECD, 1975).
- Alfred Tella, Dorothy Tella, and Christopher Green, The Hours of Work and Family Income Response to Negative Income Tax Plans (Kalamazoo, Michigan: W.E. Upjohn Institute for Employment Research, 1971).
- Finis Welch and Sherwin Rosen, "Labor Supply and Income Redistribution," Review of Economics and Statistics, vol. 53 (August 1971), pp. 278-82.

saving more and consuming less. On the other hand, a tax reduction could lead to decreased net saving because a smaller share of disposable income would now be required to reach a given target level of assets.

Evidence. As with labor supply, the question of the effect of variations in the after-tax rate of return on the level of saving is an empirical one. In 1974, Richard and Peggy Musgrave summarized the empirical literature on this subject as follows: ". . . studies of the relationship between savings and the rate of interest differ in their conclusion. Some hold that there is a substantial negative relationship, while others attribute little weight to the rate of interest in the consumption function." 10/

The notion that the saving rate is essentially constant and relatively unaffected by changes in the tax system, or by other changes in the real after-tax rate of return on capital, has come to be known as Denison's Law; until recently, it received widespread acceptance among economists. 11/

Michael Boskin recently drew renewed attention to this issue by reporting his finding that: ". . . private saving is indeed strongly affected by changes in the real after-tax rate of return. The estimated total (income plus substitution) interest elasticities of private saving cluster around 0.3 - 0.4." 12/ This new and somewhat surprising finding is only beginning to be reviewed by the economics profession.

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10/ Richard A. Musgrave and Peggy B. Musgrave, Public Finance In Theory and Practice (McGraw-Hill Book Company, 1973), p. 478.

11/ Edward F. Denison, "A Note on Private Saving." Review of Economics and Statistics, vol. 8 (1958), see also Paul A. David and John L. Scadding, "Private Savings: Ultrarationality, Aggregation and 'Denison's Law,'" Journal of Political Economy, vol. 82 (March/April 1974), pp. 225-49.

12/ Michael J. Boskin, "Taxation, Savings, and the Rate of Interest," Journal of Political Economy, vol. 86 (March/April 1978). His results suggests that a 10 percent rise in the after-tax rate of return on saving would increase personal saving by 3 to 4 percent.



A preliminary examination of Boskin's results, however, casts doubt on the relevance of his findings. His definition of personal saving includes spending on consumers' durable goods, such as automobiles and refrigerators; consequently, increased saving--when defined in this manner--does not necessarily make more funds available for investment activities. Furthermore, the estimates appear to have econometric problems that call their validity into question. <sup>13/</sup> In view of these problems, more work needs to be done to demonstrate the validity of Boskin's results before they can be accepted as an accurate description of actual behavior.

The overall impact. Boskin reports that a 10 percent increase in the rate of return on saving would increase personal saving between 3 and 4 percent. Although this estimate may be high for the reasons noted above, it is still far below the saving increase required to make the Roth-Kemp tax cuts self-financing. <sup>14/</sup>

Even if that very large addition to saving was forthcoming, it is unlikely that the nation's capital stock could be increased quickly. Major capital projects typically require several years to plan, design, finance, and implement. Yet, while total capital stock by its nature grows slowly in response to a tax cut, aggregate demand can increase quite quickly--reaching its full impact

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<sup>13/</sup> Notably, there is a strong likelihood that the results are distorted because the rate of inflation has been omitted from the estimating equation and because of the particular time period studied; there also appears to be substantial serial correlation, which may be overstating the apparent statistical significance of the impact of changes in the interest rate on saving.

<sup>14/</sup> It has been argued that the Roth-Kemp tax reductions, even if not self-financing, would not be inflationary in a full-employment economy if the increase in saving resulting from the higher after-tax rate of return would be sufficient to offset the rise in the federal deficit. This does not seem likely. Even using Boskin's high elasticity estimate, personal saving would be only roughly \$8 billion higher in 1983 in response to the increased after-tax rate of return--well below the estimated increment to the budget deficit (see Chapter IV).

within a few calendar quarters of the tax reduction. Since the increase in total demand is not likely to be matched by rising aggregate supply--at least not for a number of years--a commitment to large tax cuts could lead to widespread shortages and could accelerate the already rapid rate of inflation if nonfederal demands are strong. 15/

Past experience suggests that the instability represented by accelerating inflation--and the consequent increased likelihood of subsequent recession--raises business uncertainty about the future and has a depressing effect on the expansion of the economy's capital stock. Thus, a commitment to large tax cuts with spending unchanged might slow, rather than expand, the growth of domestic productive capacity.

### The Underground Economy and Tax Incentives

By definition, an underground or irregular economy is generated by government laws and regulations. In particular, it results largely from the following:

- o Government prohibits certain activities; thus, the underground economy provides goods and services not otherwise available, such as illegal drugs and gambling.
- o Government limits the employment of certain groups. For example, income penalties for taking wage employment are imposed on those receiving social security or other income-support payments; illegal aliens are not supposed to be employed, and most employees must be paid at least the statutory minimum wage. All of these laws create inducements for working "off-the-books"--strictly for cash, with no records kept.

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15/ Data Resources, Inc. (DRI) estimates that under Roth-Kemp capacity utilization in industrial materials industries would reach 93 percent by 1981 and would therefore be higher than in 1973--a year of widespread shortages and rapid inflation.

- o Government taxes certain activities; for example, the current income and social insurance tax systems provide some inducement to work "off-the-books" in order to avoid paying taxes altogether. The income tax system also may reduce individual incentive to undertake additional work within a tax period.

Evidence. In order to estimate the response of the irregular economy to the Roth-Kemp tax reductions, three facts must be determined:

- o The size of the irregular economy,
- o The proportion caused by taxation, and
- o The degree to which these previously unreported activities would be reduced in favor of taxable activity if marginal tax rates were lower.

The evidence here--given the nature of the activity--is mostly anecdotal and hardly provides grounds for strong conclusions one way or the other. Unsystematic surveys indicate that most "off-the-books" activity results from the prohibition of certain activities, the limited employment opportunities of certain groups, and the opportunity to make cash transactions in order to avoid paying taxes altogether; little of this casual evidence supports the notion that lower marginal tax rates would significantly decrease the level of "off-the-books" activity. <sup>16/</sup> It seems obvious that individuals who are involved in activities that carry severe penalties--such as the sale of illegal drugs--would not report such activities, no matter how low the tax rate.

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<sup>16/</sup> See, for example, Louis Ferman, Louise Berndt, and Elaine Selo, Analysis of the Irregular Economy: Cash Flow in the Informal Sector (University of Michigan and Wayne State University, Institute of Labor Relations, March 1978).

Overall Impact. There is no hard evidence on the probable response of the irregular economy to a cut in marginal tax rates. Without such evidence, it is unknown to what extent the Roth-Kemp tax cuts would cause activity to move from the irregular economy into the tax base. 17/

#### CONCLUSION

The fundamental issue arising from a commitment to Roth-Kemp tax cuts can be stated simply: Will the growth in productive capacity induced by greater incentives to work, save, and invest be large enough and rapid enough to prevent widespread shortages and accelerated inflation? The available evidence provides no reason for an optimistic answer to this question.

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17/ The increased allocational efficiency that would result from reducing the attractiveness of legal tax shelters is also most difficult to estimate.



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### CHAPTER III. AGGREGATE DEMAND AND ECONOMIC GROWTH TARGETS

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Conventional macroeconomic analysis of fiscal policy effects is largely, though not entirely, demand-oriented. <sup>1/</sup> Greatly simplified, the conventional analysis of the economic effects of tax cuts can be characterized as follows:

- o The primary stimulus to production and employment occurs through increases in final private demands. Cuts in personal income taxes increase disposable income and, over time, add to consumer spending and saving. Similarly, business tax cuts spur business investment spending.
- o The size of the overall impact on GNP depends on many factors, such as the type of tax cut and the response of monetary policy. For example, if monetary policy is fully accommodative, and thus short-term interest rates are not increased, the overall impact would be larger than if interest rates were increased.
- o The distribution of increased GNP between real output and inflation depends largely on the amount of unemployment and underutilized capital stock. In an underemployed economy, a tax cut tends to move real output toward capacity; in a fully employed economy, however, a tax cut tends to move the economy toward excess demand and higher prices. Personal income tax cuts do generate increased private saving and investment, but changes in productive capacity occur slowly relative to changes in demand.
- o Some tax cuts have specialized effects on the composition of output or on prices. For example, tax cuts in the form of accelerated depreciation or an investment tax credit, which directly reduce the cost of capital goods, generate relatively large investment spending.

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<sup>1/</sup> For a description of how changes in fiscal policy affect economic activity, see Congressional Budget Office, Understanding Fiscal Policy, Background Paper (April 1978).

- o The net revenue loss is usually significantly less than the gross loss because of the increased income and output--and consequently the larger tax base--generated by the stimulus. Nevertheless, the increase in economic activity is rarely large enough for the tax cuts to be self-financing.

Within this conventional framework, the major question about the Roth-Kemp bill is: Would it result in an overheated economy? In part, the answer depends on the degree of excess capacity in the private sector and the impact of the budget on the economy without such tax cuts. These issues are examined in this chapter along with a brief discussion of the risk involved in the Roth-Kemp commitment to future tax cuts.

#### CAPACITY AND ECONOMIC TRENDS

According to the conventional analysis outlined above, the question whether a large tax cut would be consistent with Congressional targets for reducing inflation and maintaining real economic growth depends largely on the degree of slack in the economy and the outlook for final demands. Although there is always a great deal of uncertainty in the economic outlook, it is instructive to examine the Roth-Kemp proposal in light of the currently available evidence.

Excess capacity in labor markets has been reduced significantly during the past year (see Table 5). Although the overall unemployment rate is quite high by historical standards, it appears less so when corrected for demographic changes. Unemployment rates for married men are now at their 1972 levels; most analysts agree that in 1973 the economy experienced significant excess demand. Measures of capacity utilization (shown in Table 6) are likewise now around 1972 levels, again suggesting the possibility of high levels of resource utilization in the following year.

Though there still seems to be some slack in the economy, it has been declining rapidly. If economic growth were to slow in the year ahead, slack would not be reduced; thus, there would be little immediate danger that the first phase of Roth-Kemp would lead

TABLE 5. MEASURES OF LABOR-MARKET SLACK--UNEMPLOYMENT RATES OF VARIOUS GROUPS FOR SELECTED YEARS: IN PERCENTS

|                              | 1964 | 1966 | 1969 | 1972 | 1973 | Aug.<br>1977 | Aug.<br>1978 |
|------------------------------|------|------|------|------|------|--------------|--------------|
| Total                        | 5.2  | 3.8  | 3.5  | 5.6  | 4.9  | 7.0          | 5.9          |
| Men, Aged<br>35-54           | 3.0  | 2.0  | 1.5  | 2.7  | 2.1  | 3.2          | 2.9          |
| Married Men,<br>Wife Present | 2.8  | 1.9  | 1.5  | 2.8  | 2.3  | 3.5          | 2.8          |
| Managers,<br>Administrators  | 1.4  | 1.0  | 0.9  | 1.8  | 1.4  | 2.5          | 1.8          |
| Craft and Kindred<br>Workers | 4.2  | 2.8  | 2.0  | 4.3  | 3.7  | 5.5          | 4.4          |

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics.

to excess-demand inflation. 2/ Increasing the tax cut from \$20 billion a year to, for example, \$30 billion, with no compensating cut in spending, would have a relatively small overall effect on economic activity in the first year. (Depending on the type of tax cut, the unemployment rate might be 0.1 percentage point lower and inflation 0.1 percentage point higher by year-end.)

2/ CBO's most recent forecast for 1979 indicates that real economic growth will be in the 2.7 to 4.2 percent range during the year, given a \$20 billion annual rate tax cut in January (\$15 billion for the fiscal year), federal outlays at \$495 billion in fiscal year 1979, and a Federal Reserve monetary policy that avoids a serious credit squeeze. Growth at the upper end of this range could result in tight labor markets during 1979 if recent low productivity growth persists. See Congressional Budget Office, Inflation and Growth: The Economic Policy Dilemma (July 1978).



TABLE 6. MEASURES OF CAPACITY UTILIZATION FOR SELECTED YEARS: IN PERCENTS

|                                 | Postwar<br>Average | 1964 | 1966 | 1969 | 1972 | 1973 | Aug.<br>1978 |
|---------------------------------|--------------------|------|------|------|------|------|--------------|
| Capacity Utilization            |                    |      |      |      |      |      |              |
| Manufacturing                   | 83                 | 86   | 91   | 86   | 83   | 88   | 85           |
| Primary processing              | 85                 | 88   | 91   | 89   | 88   | 92   | 87           |
| Vendor Performance <u>a/</u>    | 51                 | 63   | 73   | 65   | 63   | 88   | 65           |
| Manufacturing<br>Overtime hours | N.A.               | 3.1  | 3.9  | 3.6  | 3.4  | 3.8  | 3.5          |

N.A. = Not available.

SOURCES: Federal Reserve Board; U.S. Department of Commerce, Bureau of Economic Analysis; U.S. Department of Labor, Bureau of Labor Statistics.

a/ Percent of purchasing agents reporting slower deliveries.

Some have argued that the present situation in labor markets and in capacity utilization is much like that in 1964 and that a tax reduction of similar relative magnitude (perhaps \$45 billion at an annual rate in today's economy) is therefore called for. But the economic environment today is different from that in 1964, at least in one important respect: the rate of inflation is much higher and, perhaps because of institutional changes (such as the widespread use of cost-of-living wage adjustments), the present economy seems more prone to inflationary momentum than it was in the 1960s. The risk of inflation generated by excessive fiscal stimulus therefore seems to be greater today.

In any case, if economic growth is strong in the months ahead, tight markets may be experienced by the end of 1979, and a commitment to further tax cuts would be highly inflationary. Of course, the extent of inflation is difficult to predict. The

third and last reduction provided by the Roth-Kemp proposal would not be effective until 1981, and its economic impact would be significant for several years thereafter. A complete macroeconomic analysis of these tax cuts would therefore require a forecast of the underlying strength of the economy for more than five years ahead. Although CBO finds five-year trend projections useful for budget planning purposes, it does not believe that the current state of the art of economic forecasting permits a precise evaluation of the macroeconomic outcome of tax cuts that far in the future. If there is a recession in, say, 1981, a large tax cut may be the antidote. On the other hand, if economic growth is strong, fiscal restraint to moderate the rise in demand and consequent inflation may be appropriate. The economic environment cannot be predicted with sufficient accuracy to design an optimal fiscal policy three years in advance.

#### EXPECTED REVENUE GAINS BECAUSE OF THE PROGRESSIVE INCOME TAX STRUCTURE AND INCREASES IN SOCIAL SECURITY TAX RATES

Although the economic outlook is uncertain, it is clear that, under current law, social security tax rates and, almost certainly, personal income tax rates will increase and exert a depressing effect on the economy. The increase in social security taxes will result from existing legislation, which includes increases in both the tax rate and the wage base. The increase in personal income tax rates will occur automatically as GNP grows because, under the progressive income tax structure, increased incomes are taxed at higher rates.

The automatic increase in personal income tax rates, due to the combination of increasing money incomes and the progressive income tax, slows the growth in spendable income relative to before-tax income and acts as a drag on the economy. Generally, in the absence of legislated changes, the economic impact of the automatic increase in the personal income tax burden is not offset by automatic increases in federal spending. Considering the effect of inflation alone on the relative behavior of federal revenues and expenditures, historical evidence indicates that, for a given amount of inflation, expenditures tend to increase at about the same rate as prices while revenues grow considerably faster.<sup>3/</sup> Estimates of the responsiveness of personal income taxes to income

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<sup>3/</sup> See Congressional Budget Office, The Effects of Inflation on Federal Expenditures, Background Paper (June 1976).

growth (that is, the income elasticity of personal income taxes) indicate that these revenues grow about 50 percent faster than total taxable personal income grows.

Tax cuts sufficient to offset increased revenues resulting from the progressive income tax structure are sometimes advocated. What amount would tax rates have to be cut to offset such increases? The precise answer depends upon projections of inflation and real growth as well as upon estimates of the responsiveness of personal income tax receipts to growth. Any estimate must be regarded as a rough approximation, because the figures are significantly affected by these assumptions. The estimate shown in Table 7 is based on the economic projections for the 1979-1983 period used by the Senate and House Budget Committees for the second concurrent resolution and an assumed income elasticity of 1.5. Since inflation is projected to be higher than real economic growth, most of the increased revenues result from inflation.

TABLE 7. ADDITIONAL REVENUES BECAUSE OF INCOME TAX PROGRESSIVITY, FISCAL YEARS 1979-1983: IN BILLIONS OF DOLLARS

|   | 1979 | 1980 | 1981 | 1982 | 1983 |
|---|------|------|------|------|------|
| Additional Revenues Because of Income Tax Progressivity <u>a/</u> | 10.1 | 21.9 | 36.9 | 55.3 | 77.8 |
| Because of real growth  | 3.8  | 7.9  | 15.4 | 23.5 | 32.8 |
| Because of inflation  | 6.3  | 14.0 | 21.5 | 31.8 | 45.0 |

NOTE: Estimates of additional revenues are made relative to fiscal year 1978.

a/ Revenues above those that would be collected if the percent increase in personal income tax revenues were equal to the percent increase in taxable personal income. An elasticity of 1.5 is assumed.

The total increase in revenues resulting from the progressivity of the income tax is less than the revenue loss of the Roth-Kemp cuts, according to reasonable estimates. For fiscal year 1981, the year of the last rate reduction, the Joint Committee on Taxation (JCT) estimates that the gross revenue loss resulting from the personal tax cuts is about \$98 billion; the revenue growth resulting from progressivity is roughly estimated to be about \$37 billion that year. <sup>4/</sup> Although CBO believes that the \$61 billion difference suggested by these two estimates may be somewhat high, the actual gap is certainly substantial. Furthermore, it would not be changed substantially by an assumption of higher inflation, as some have suggested, since both estimates would be raised accordingly.

The contention that taxes should be cut sufficiently to offset future automatic increases in personal income tax rates is frequently based on issues not directly related to macroeconomic policy. First, advocates of a smaller federal sector claim that, if anticipated automatic revenue increases are not committed to tax cuts, the revenue gains will be absorbed by spending initiatives. Second, it is often argued that the increases in effective tax

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<sup>4/</sup> The magnitude of the Roth-Kemp tax cuts is a matter of controversy. Like the estimates of revenue growth due to progressivity, assumptions such as the level of economic activity and the responsiveness of revenues to economic growth significantly affect the estimated revenue loss. The JCT estimate of the revenue loss is higher than most others but, because it is based on the best available methodology, CBO has used this estimate in its work. The estimate of the Joint Committee on Taxation is based upon a tax model constructed from 50,000 sample returns. Most revenue forecasters believe this model provides the most accurate estimate of direct revenue loss (before feedback); in contrast, the crude estimates of the direct revenue loss used in most large econometric model simulations are substantially smaller as a result of the structure of these models. In comparing the revenue loss due to tax cuts and the increase in revenue due to progressivity, it is important that the economic assumptions be approximately comparable in both calculations.

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rates that occur because of inflation and without overt Congressional action are unfair and should be fully offset. <sup>5/</sup> These arguments, in large part, involve conflicting value judgments that can be resolved only through the political process.

Although pejorative connotations are often associated with the automatic increase in income tax rates arising from progressivity, this should not always be the case when economic stabilization is a matter of concern. For example, if there is a high risk that the economy will become overheated, the automatic increase in tax rates will work to slow the growth of aggregate demand and inflation. This passive increase in tax rates occurs immediately as incomes rise. History suggests that legislated changes cannot easily respond in such a timely fashion, principally because increases in tax rates are difficult to enact.

An argument has also been made that income taxes should be additionally cut to offset the legislated increase in social security taxes, shown in Table 8. A cut of this kind would be more stimulative than it first appears. The tax increases of the 1972 social security amendments may not represent an overall restrictive burden because they were designed to adjust the maximum wage base for inflation and growth (thus holding the rate constant) and to finance increased benefits, which add to spendable income. The 1977 amendments, however, did increase effective tax rates, and they were designed to improve long-term funding of social security rather than to finance near-term increases in benefits. The effect of the 1977 amendments is to reduce overall after-tax income and economic activity; thus, only these amendments may have an overall restrictive effect on economic activity.

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<sup>5/</sup> This could be done by indexing the tax system for inflation or by periodic changes in the tax law. Sometimes there is confusion between an increase in revenues because of inflation and an increase in tax rates because of inflation. An increased burden arises only when the percentage increase in tax payments exceeds the percentage increase in income--that is, when the tax rates rise.

TABLE 8. ADDITIONAL REVENUES BECAUSE OF SOCIAL SECURITY TAX INCREASES, FISCAL YEARS 1979-1983: IN BILLIONS OF DOLLARS

|  | 1979 | 1980 | 1981 | 1982 | 1983 |
|--|------|------|------|------|------|
| Additional Revenues Because of Social Security Legislation | 4.6  | 10.7 | 22.8 | 32.0 | 34.9 |
| 1972 Amendments <u>a/</u>                                  | 1.3  | 1.7  | 6.2  | 8.6  | 9.4  |
| 1977 Amendments <u>b/</u>                                  | 3.3  | 9.0  | 16.6 | 23.4 | 25.5 |

a/ Joint Committee on Taxation, January 1978 estimates (adjusted for fiscal year 1978 rather than fiscal year 1977 baseline).

b/ CBO, April 1978 estimates.

THE PROBLEM OF COMMITMENT TO FUTURE TAX REDUCTIONS:  
THE INFLATION RISK

The Roth-Kemp tax bill would provide a major stimulus to the economy, substantially more than the amount needed to offset restrictive tax increases. From the viewpoint of economic policy-making, a major drawback of the proposal is its commitment to large future tax reductions despite the great uncertainty regarding the longer-run performance of the economy. This commitment reduces the flexibility of fiscal policy and greatly increases the risk of excess demand inflation relative to the risk of recession.

The Flexibility of Fiscal Policy

Politically, it has been more difficult to enact tax increases to reduce excess demand than to cut taxes to boost economic activity. At times, the easiest way to achieve a restrictive tax policy is for the Congress to postpone tax cuts that would offset the automatic increase in income tax rates arising from the interaction of inflation and the progressive income tax structure. Furthermore, spending programs cannot easily be used in place

of tax changes to achieve either a moderation or an increase in total demand. A major difficulty with using spending programs to achieve stabilization is the relatively long period required for implementation. Whereas tax law changes can be implemented in a few weeks (after enactment), spending programs frequently take years to implement fully. Thus, the commitment to future tax cuts could significantly reduce the flexibility of fiscal policy; particularly, it could limit the Congress's ability to deal with a situation that requires a restrictive tax policy, such as excess demand inflation.

### The Inflation Risk

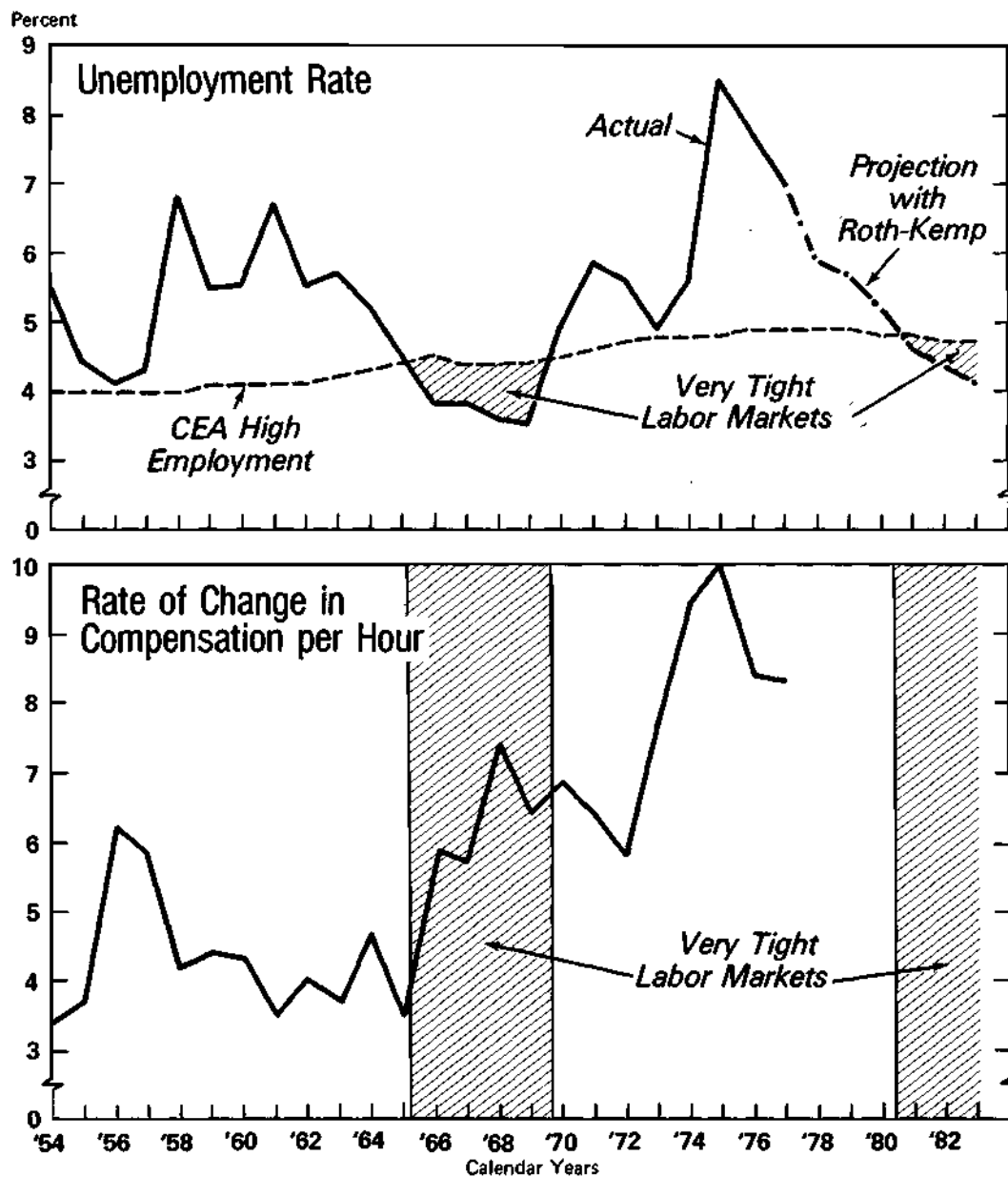
How serious is the risk of inflation with the Roth-Kemp tax reduction proposal? The answer depends largely on the future strength of the economy and on the effect of the tax cuts. Forecasts of the impact of the Roth-Kemp tax cuts by CBO and others are presented in Chapter IV. Each of these forecasts shows a substantial decline in the unemployment rate and an acceleration in inflation because of excess demand. In some cases, the unemployment rate is estimated to fall below 4 percent. Although the estimates differ, there is consensus that low unemployment rates generate inflation in the absence of substantial changes in the structure of the labor market, in productivity, or in both.

Past experience indicates that a large reduction in unemployment would be highly inflationary. This is illustrated in Figure 1. The top panel compares past and projected unemployment rates with the "high-employment benchmark unemployment rate" of the Council of Economic Advisers (CEA). <sup>6/</sup> This high-employment benchmark is an estimate of what the reported unemployment rate would be in each year with high employment--that is, with the degree of labor market tightness represented by the unemployment rate of 4.0 percent in 1955. Because of demographic and other changes, the high-employment benchmark has risen from 4.0 percent in 1955 to 4.9 percent today; it is expected to decline gradually in future years, as the "baby boom" generation moves out of the high-unemployment years of youth.

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<sup>6/</sup> The CBO projection is shown in Chapter IV.

Figure 1.  
LOW UNEMPLOYMENT AND WAGE INFLATION



SOURCES: Actual unemployment rates and compensation per hour -- U.S. Department of Labor, Bureau of Labor Statistics.  
 CEA high employment unemployment rate -- Council of Economic Advisers.  
 Projection of unemployment rate with Roth-Kemp -- Congressional Budget Office.



The lower panel of the figure shows rates of change in labor compensation per hour. In past years, compensation per hour sharply increased when the unemployment rate fell to near the benchmark rate--for example, in 1956 and 1973. When the unemployment rate was held substantially below the benchmark rate for a sustained period--in the years 1966 through 1969--there was a sustained acceleration of labor cost. Compensation increases rose from annual rates of around 4 percent in the early 1960s to rates greater than 6 percent in the late 1960s and early 1970s, interrupted in 1972 by the imposition of price and wage controls.

On the basis of past experience, unemployment rates around the CEA benchmark rate must be characterized as representing tight labor markets, and rates below the benchmark rate (shaded area in the figure) as representing very tight labor markets. The projected unemployment rates shown in this figure fall well below the CEA benchmark, suggesting that the Roth-Kemp tax cuts will generate substantial wage inflation. 7/

This is not to assert that the CEA rate represents the irreducible minimum of "frictional" unemployment in the U.S. economy. Clearly, it does not; lower rates are attainable, and they would provide benefits to holders of the new jobs. But with existing labor market institutions, "very tight" labor markets lead to accelerating labor costs, which tend to be translated directly into accelerating inflation. Tight labor markets are not the only cause of accelerating inflation, as was abundantly demonstrated in 1974 and 1975, but the evidence strongly indicates that they can be an important cause. 8/

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7/ This projection, described in Chapter IV, is based on CBO's estimate of the incremental effect of the Roth-Kemp tax cuts, given the economic baseline assumed in the five-year projection used to mark up the Second Concurrent Resolution on the Fiscal Year 1979 Budget.

8/ Inflation can be caused by restrictions of supply as well as by excess demand. In the mid-1970s, inflation was increased by a variety of supply-related factors, including the establishment of the oil cartel and a worldwide crop failure. Furthermore, once inflation accelerates, it gathers (Continued)

The expansion of demand resulting from Roth-Kemp would increase utilization of capital as well as of labor. For example, estimates by DRI indicate that output increases would outstrip the capacity increases resulting from the Roth-Kemp tax cuts, so that by 1981 capacity utilization in the industrial materials industries would average 93 percent for the year as a whole. 9/ This rate would be even higher than that experienced in the inflationary 1973 boom period.

Thus, conventional analysis indicates that there is a serious risk that the tax cuts would put upward pressure on prices by tightening labor markets and by creating shortages of industrial capacity. If past experience is a guide, the costs of ridding the economy of a new burst of inflation would be high. Once inflation gets started, it gathers momentum; substantial losses of employment and output are needed to reduce inflation quickly.

#### INVESTMENT SPENDING

One of the benefits of the Roth-Kemp tax cuts is the stimulus to business investment that would be provided by the cut in corporate income tax rates. The recovery of investment spending, since the 1974-1975 recession, has been disappointing, and most analysts agree that a cut in business taxes is an effective way of increasing investment.

The bill has nonetheless been criticized for providing only a relatively small cut in business taxes. About 8 percent of the revenue reduction is for corporations, as compared with the one-third corporate/two-thirds personal division frequently advocated. Furthermore, although this corporate tax reduction was proposed in order to increase the supply of capital, most studies indicate

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momentum--largely as a result of the widespread tendency to link income adjustments to past price changes. This is the mechanism underlying the continued rapid growth in labor compensation in the mid-1970s, despite high joblessness during and after the 1974-1975 recession.

9/ The Data Resources Review of the U.S. Economy (August 1978), p. 13.

that increases in the investment tax credit or accelerated depreciation are more effective instruments for this purpose. 10/ Indeed, the Roth-Kemp bill could adversely affect investment spending if it results in an acceleration of inflation attributable to excess demand. Inflation increases the cost of capital, it increases the tax burden on economic profit because depreciation relates to historical cost rather than replacement cost, and it may also create considerable uncertainty regarding the profitability of business ventures, thereby inhibiting investment spending.

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10/ Congressional Budget Office, The Economic Outlook (February 1978), pp. 33-34.

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## CHAPTER IV. ESTIMATES OF THE IMPACT OF ROTH-KEMP TAX CUTS

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Two general methods have been used to estimate the impact of the Roth-Kemp tax cuts on the economy. The first involves a search for a similar event in recent history and an analysis of its aftermath; the second uses econometric models of the economy to simulate the future under the assumption of enactment of the bill.

### THE 1964 TAX CUT

The tax reduction most similar to the Roth-Kemp bill is the Kennedy-Johnson tax cut in 1964. It has been asserted that the 1964 tax rate reduction had very large supply effects and, as a result, was self-financing. This assertion has been disputed by the economists who designed that tax cut proposal.

The 1964 tax reduction was enacted to help close the estimated 5 percent gap between the actual and potential GNP that existed in 1963. Personal income taxes were cut from a range of 20 to 91 percent to a range of 14 to 71 percent in two stages, in 1964 and 1965. Withholding rates were reduced by the full amount in March 1964. The corporate income tax rate was reduced from 52 to 48 percent. Both of those changes were permanent.

The revenue loss (before feedback) from that personal income tax reduction totaled nearly \$12 billion when it reached its full impact; the corporate tax reduction, \$3 billion. The overall tax cut amounted to about 2.2 percent of GNP; in today's economy, a similar size cut would amount to about \$45 billion to \$50 billion.

In its 1964 Annual Report, the Council of Economic Advisers estimated that this personal tax reduction would eventually add about \$18 billion to GNP. The corporate tax reduction, along with the continued effects of the previously enacted investment tax credit, was expected to add about \$10 billion to \$14 billion to GNP. It has been argued recently that the 1964 tax cut had a substantial effect on aggregate supply and that the overall results

were much larger than anticipated. These statements are generally based on the actual performance of the post-1964 economy. The problem with this approach is that it neither isolates the impact of the tax cut from other events, nor does it distinguish supply from demand effects. Many events occurring during this period--such as the military build-up because of the Vietnam War--significantly affected the economy.

The 1964 tax cut has been studied by CBO and a number of other analysts. Using three macroeconomic models, CBO estimated that the personal income tax cut alone increased GNP by some \$11 billion to \$23 billion by 1966. 1/ By 1967, three years after passage of the bill, the unemployment rate had dropped to 3.8 percent, as contrasted with an estimated unemployment rate of about 4.5 percent without the tax cut. Tighter labor markets significantly affected inflation, increasing the price level by an estimated 1.4 to 2.2 percent above what it would otherwise have been. According to this analysis, the impact of the corporate tax rate cut was negligible, as compared with the personal tax cut.

None of the models used by CBO showed that the increased economic activity generated by the tax cut raised revenues and lowered countercyclical transfer payments enough to make the tax rate reductions self-financing. Instead, the models showed a net increase in the federal deficit, after three years, of \$5 billion to \$13 billion above the level in the no-tax-cut simulations. Although the estimates made by others also show considerable variation, CBO is unaware of any systematic study of the 1964 tax cut that indicates that it was self-financing.

#### SIMULATIONS WITH THREE MACROECONOMIC MODELS

Policy simulations with large econometric models provide an indication of the economic impact of the proposed tax cuts. The estimated effects according to three quarterly models--those

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1/ Congressional Budget Office, Understanding Fiscal Policy, Background Paper (April 1978), pp. 23-25.

of Data Resources, Inc. (DRI), Chase Econometric Associates, Inc. (Chase), and MIT-Penn-SSRC (MPS)--are reported below. <sup>2/</sup> Since each of these models represents a somewhat different view of the structure of the economy, a review of all three presents a useful basis for assessing the impact of the tax cuts. It is important to note, however, that the model simulations incorporated numerous crucial assumptions and that these assumptions, which are not the same in each model, flavor the results. Although many of the assumptions are relatively innocuous when used in conjunction with smaller tax cuts, they become important with a reduction of the magnitude of Roth-Kemp.

### The Gross Revenue Loss Assumptions

The first step in estimating the economic effects of a tax cut is to determine the gross federal revenue loss (before feedback). These estimates depend critically on projections of taxable income in the absence of a tax cut and on the response of personal tax receipts to growth in money incomes. High growth in money income and high responsiveness lead to greater gross revenue loss. In addition, as indicated in Chapter III, high responsiveness means that the tax structure will exert a more restrictive influence on the economy as incomes rise.

The Joint Committee on Taxation (JCT) has estimated the gross revenue loss that would result in calendar years 1979-1983 from the Roth-Kemp tax reductions (in billions of dollars):

|                               | Calendar Years |      |       |       |       |
|-------------------------------|----------------|------|-------|-------|-------|
|                               | 1979           | 1980 | 1981  | 1982  | 1983  |
| Personal Tax<br>Revenue Loss  | 27.4           | 63.8 | 112.3 | 134.7 | 161.7 |
| Corporate Tax<br>Revenue Loss | 4.0            | 6.6  | 9.6   | 10.5  | 11.5  |

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<sup>2/</sup> The Wharton quarterly model, which CBO uses frequently, does not have the capability to simulate beyond 1980 and was not used in these exercises.

Given the uncertainty about the future growth of money income and the responsiveness of tax revenues to this growth, estimates of the gross revenue loss from Roth-Kemp can differ. As discussed in Chapter III, CBO has traditionally used the JCT estimates of revenue loss because they are derived from the best available methodology. <sup>3/</sup>

#### Other Assumptions

Other assumptions that significantly affect the outcome of the simulations include the following: the overall baseline economic scenario (that is, the performance of the economy without the tax cut), the response of monetary policy, and the level of federal spending. Although the simulations were adjusted for some of the differences in assumptions, significant discrepancies remained, especially in the rate of economic growth in the baseline forecast (see Table 9).

#### Simulation Results

Estimates of the incremental impact of the Roth-Kemp tax cuts (that is, the difference between the baseline and the tax cut forecasts) are shown in Table 10. In a qualitative sense, the three simulation results are quite similar. All show a substantial reduction in unemployment and an acceleration in the rate of inflation. Some significant differences in both the size and the mix of the impact of Roth-Kemp, however, do arise. In the DRI simulation, the jobless rate falls only slightly below 5 percent, while both Chase and MPS show the unemployment rate falling below

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<sup>3/</sup> The large econometric models produce estimates of gross revenue loss from Roth-Kemp that are lower than the JCT estimate. These models, however, assume a lower responsiveness of tax revenues to income growth than is generally found in empirical investigations of this relationship; large econometric models therefore probably understate the true gross revenue loss. In some cases, the low responsiveness posited in the large models implies that a series of tax-rate reductions are assumed to occur in the models' baseline forecasts.

TABLE 9. ALTERNATIVE PROJECTIONS OF THE ECONOMY WITHOUT THE ROTH-KEMP TAX CUTS, CALENDAR YEARS 1979-1983: IN PERCENTS

| Economic Variable | 1979 | 1980 | 1981 | 1982 | 1983 |
|-------------------|------|------|------|------|------|
| Real Growth       |      |      |      |      |      |
| DRI               | 3.0  | 4.7  | 3.1  | 2.5  | 3.4  |
| MPS               | 3.0  | 5.2  | 4.7  | 2.2  | N.A. |
| Chase             | 1.9  | 2.7  | 2.7  | 3.4  | 3.5  |
| Inflation         |      |      |      |      |      |
| DRI               | 6.3  | 6.2  | 5.7  | 5.4  | 5.1  |
| MPS               | 8.7  | 7.4  | 7.6  | 7.4  | N.A. |
| Chase             | 6.9  | 5.8  | 5.9  | 5.1  | 4.7  |
| Unemployment      |      |      |      |      |      |
| DRI               | 6.3  | 6.1  | 5.9  | 6.1  | 6.1  |
| MPS               | 6.4  | 6.1  | 5.7  | 6.2  | N.A. |
| Chase             | 6.5  | 6.9  | 7.1  | 7.1  | 6.9  |

N.A. = Not available.

4 percent. With unemployment rates below 4 percent--well below what is generally regarded as full employment--the inflation impact would be expected to be quite large in these simulations. In fact, this is the result in the MPS simulation, which shows the inflation rate up more than 4 percentage points in both 1981 and 1982. By contrast, the Chase simulation shows a relatively small effect on prices, even less than in DRI, which shows a much higher labor-market slack.

In both the DRI and the MPS models, economic growth weakens and unemployment rises by 1982 because of the stringent credit conditions brought about by the increased inflation, the larger federal deficit, and high interest rates. Unemployment continues to decline in the Chase simulation through 1983. As can be seen, Chase shows a much more favorable outcome than the other two models, partly because of its relatively weak baseline but also because a more favorable trade-off between inflation and unemployment is implicit in that model.



TABLE 10. ALTERNATIVE ESTIMATES OF THE INCREMENTAL EFFECT OF THE ROTH-KEMP TAX CUTS, CALENDAR YEARS 1979-1983

| Economic Variable                         | Difference from baseline in: |      |      |      |      |
|---|------------------------------|------|------|------|------|
|   | 1979                         | 1980 | 1981 | 1982 | 1983 |
| Real Growth<br>(billions of 1978 dollars) |                              |      |      |      |      |
| DRI                                       | 11.1                         | 28.7 | 48.7 | 38.1 | 22.1 |
| MPS                                       | 19.3                         | 54.0 | 79.4 | 52.8 | N.A. |
| Chase                                     | 10.3                         | 31.7 | 60.9 | 82.1 | 89.4 |
| Inflation<br>(percentage points)          |                              |      |      |      |      |
| DRI                                       | 0.0                          | 0.2  | 0.8  | 1.8  | 1.3  |
| MPS                                       | 0.2                          | 1.7  | 4.2  | 4.1  | N.A. |
| Chase                                     | 0.0                          | 0.1  | 0.4  | 0.7  | 1.2  |
| Unemployment<br>(percentage points)       |                              |      |      |      |      |
| DRI                                       | -0.2                         | -0.6 | -1.0 | -0.9 | -0.5 |
| MPS                                       | -0.4                         | -1.3 | -2.0 | -1.8 | N.A. |
| Chase                                     | -0.2                         | -1.0 | -2.1 | -3.0 | -3.4 |

N.A. = Not available.

#### Estimate of Feedback Effects

The various estimates of the increase in federal tax receipts resulting from the growth in economic activity are shown in Table 11. The differences in feedback among these models are primarily the result of the different estimated effects of Roth-Kemp on nominal GNP rather than the result of differences in the tax structure. Their estimated feedback effects are therefore similar when expressed as a percentage of nominal GNP effects. Although these reflows do offset some of the direct costs of the Roth-Kemp proposal, the estimated increase of the federal deficit is still very large in all three models.

TABLE 11. ALTERNATIVE ESTIMATES OF TAX REFLows AS A PERCENT OF GROSS REVENUE LOSS, CALENDAR YEARS 1979-1983

|       | 1979 | 1980 | 1981 | 1982 | 1983 |
|-------|------|------|------|------|------|
| DRI   | 17.3 | 26.0 | 31.8 | 36.5 | 35.7 |
| MPS   | 19.1 | 25.5 | 30.5 | 26.3 | N.A. |
| Chase | 14.1 | 21.8 | 27.4 | 38.4 | 44.9 |

N.A. = Not available.

#### THE CBO ESTIMATE

CBO has also estimated the impact of the Roth-Kemp tax cuts, relying to a large extent on consensus multipliers developed previously and on experience with many models. 4/ But CBO's confidence in such estimates decreases the further into the future the estimates are projected and the larger the tax cut is. The Roth-Kemp reductions occur over a period of three years, and their size is well beyond the normal range of postwar experience. Nevertheless, the CBO estimate appears to be fully consistent with the most widely accepted evidence on the behavior of the economy.

CBO estimates that, by 1983, the Roth-Kemp tax cuts would provide a large stimulus to economic output, driving the unemployment rate down to nearly 4 percent. But this increase in economic activity exceeds what is usually regarded as full capacity; therefore, it would be achieved at the expense of much higher inflation as well as a larger federal deficit.

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4/ See Congressional Budget Office, The Multipliers Project (August 1977).

With the Roth-Kemp tax cuts, the unemployment rate would be substantially below the levels achieved since the beginning of this decade--below even the 1973 boom rates. The economy would enter a period of excess demand, which would place substantial upward pressure on prices. CBO estimates that the incremental impact of the Roth-Kemp proposal, shown in Table 12, would be to raise the inflation rate by about 2.7 percentage points. Adjusting for the fiscal stimulus already included in the five-year projection adopted by the Budget Committee staffs, the inflation rate in 1983 would be nearly 2 percentage points above the five-year projection. Although this estimate of inflation is substantial, it may well be low, given the demographic and structural changes that have occurred in the labor market and the inflationary psychology evident in the economy today.

CBO estimates that the deficit would be up sharply as a result of the Roth-Kemp tax cuts, even after accounting for the substantial reflows produced by the increased GNP. Furthermore, a large part of the revenue reflows would be generated by increased inflation brought about by Roth-Kemp, particularly in the later years.

#### The Assumed State of the Economy without the Tax Cuts

As indicated earlier, the ultimate effect of the Roth-Kemp tax cuts depends to a great extent on the underlying strength of the economy without the tax reduction. The inflation generated by the tax cuts will depend heavily on the tightness of labor markets and the utilization rate of plant and equipment. If nonfederal demands were so strong that the economy reached full capacity without a tax cut, then a tax reduction the size of Roth-Kemp would generate extremely high rates of inflation. But, if the economy were to weaken seriously without a tax cut, then the tax reduction would produce a significant rise in real output and employment, and the impact on inflation would be more moderate.

In order to maintain consistency with other budget estimates, the CBO estimate of the impact of the Roth-Kemp tax reductions uses the economic baseline implicit in the five-year projections adopted

TABLE 12. ESTIMATED INCREMENTAL ECONOMIC IMPACT OF ROTH-KEMP  
TAX CUTS, FISCAL YEARS 1979-1983: IN BILLIONS OF  
DOLLARS a/

|   | 1979 | 1980 | 1981  | 1982  | 1983  |
|---|------|------|-------|-------|-------|
| Current Dollar GNP                        |      |      |       |       |       |
| In dollars                                | 13.4 | 55.0 | 118.3 | 185.2 | 253.7 |
| Growth rate (percentage points) <u>b/</u> | 1.2  | 2.1  | 2.3   | 1.5   | 1.5   |
| Constant Dollar GNP                       |      |      |       |       |       |
| In dollars                                | 8.3  | 30.7 | 54.5  | 62.8  | 53.3  |
| Growth rate (percentage points) <u>b/</u> | 1.0  | 1.8  | 1.2   | -0.2  | -1.1  |
| Inflation Rate                            |      |      |       |       |       |
| (percentage points) <u>b/</u>             |      |      |       |       |       |
| GNP deflator                              | 0.0  | 0.2  | 0.9   | 1.6   | 2.5   |
| CPI                                       | 0.1  | 0.2  | 1.0   | 1.7   | 2.7   |
| Employment                                |      |      |       |       |       |
| (thousands)                               | 169  | 892  | 1,803 | 2,257 | 2,012 |
| Unemployment Rate                         |      |      |       |       |       |
| (percentage points)                       | -0.1 | -0.5 | -1.2  | -1.5  | -1.3  |
| Direct Budget Cost                        | 21.0 | 58.0 | 105.7 | 138.1 | 164.6 |
| Net Budget Cost                           | 16.0 | 38.4 | 64.4  | 74.8  | 79.1  |

a/ Change from baseline projection.

b/ Fourth quarter to fourth quarter of fiscal years.

by the staffs of the Budget Committees. <sup>5/</sup> This five-year projection has more growth, lower unemployment, but less inflation than the baseline projections used in some other estimates of the impact of Roth-Kemp.

### Monetary Policy

The CBO estimate of the incremental effect of the Roth-Kemp tax cuts assumes a rapid increase in the money supply--more rapid than current Federal Reserve target rates. This assumption may not be realistic. Growth in the basic money supply at such a rapid rate--together with higher inflation, larger federal deficits, and lower unemployment--may well result in a more restrictive monetary policy; if so, the incremental effects of Roth-Kemp would be smaller.

Since tight credit markets are most detrimental to investment activity, the combination of the Roth-Kemp tax cuts and a restrictive monetary policy could retard the growth of productive capacity and raise the jobless rate. Indeed, the DRI and MPS models forecast this scenario if the Roth-Kemp reductions are enacted.

### The Effect of the Corporate Tax Rate Reduction

In earlier work prepared for the Budget Committees, CBO has shown that there is substantial disagreement among macroeconomic models regarding the size of the economic impact of changes in

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<sup>5/</sup> The baseline projection was derived by removing the tax cuts already (implicitly) in the five-year projection assuming moderate growth in nonfederal demands and current policy spending. The tax cuts were then applied to this weaker baseline economy. As a result, the effect on the economic assumptions adopted by the Budget Committees is smaller than the overall incremental effect of the Roth-Kemp tax cuts.

corporate income taxes. <sup>6/</sup> Given the present state of the art, it is impossible to produce a consensus estimate of the effect of the corporate tax cut included in the Roth-Kemp proposal. Nevertheless, despite wide variations in estimates of economic effect, none of the models show that corporate tax rate cuts are self-financing. The Roth-Kemp tax cuts, however, are largely reductions in personal income taxes, and there seems to be more agreement on the magnitude of its effects on these taxes. The composition of the proposed tax reductions therefore increases CBO's confidence in its assessment of the overall impact of the Roth-Kemp proposal.

### Longer-Term Effects

Some economists object to using econometric models, which are greatly influenced by the cyclical behavior of the economy, to analyze policy options over the longer term. More precisely, some argue that the long-run supply effects from relative price changes are not properly captured in such models.

It is possible that the longer-term consequences of fiscal policy actions may be different from those suggested by the available models. At present, however, there is little evidence that the macroeconomic models err significantly in this regard (see Appendix). Furthermore, it may be a mistake to assume that all of the longer-term consequences of the proposed tax cuts are favorable. Rapid inflation--a likely consequence of Roth-Kemp--would contribute to economic instability, and past experience has shown that such instability can depress business fixed investment and slow the growth of the nation's productive capacity.

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<sup>6/</sup> See Congressional Budget Office, The Economic Outlook (February 1978), pp. 47-49.



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## CHAPTER V. TAX REDUCTIONS ACCOMPANIED BY CUTS IN SPENDING

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The Roth-Kemp proposal to reduce taxes does not include any provision for a reduction in spending; therefore, CBO's estimate of the economic impact of the bill, presented in the previous chapter, assumes spending would continue at levels set by current policy. Many of the supporters of Roth-Kemp, however, advocate that it be accompanied by substantial reductions in current-policy spending. The economic impact of a tax cut accompanied by a reduction in spending would be very different from the impact of a tax cut alone. For example, it should be possible to design spending reductions in a way that would fully offset the impact of the tax cut on inflation.

### ARGUMENTS FOR SPENDING REDUCTIONS

Some advocates of reduced federal spending contend that the only way that their goal can be achieved is to commit the nation to tax cuts before the growth in future tax receipts is absorbed by increased spending programs. They observe that the effective tax burden on individuals has risen substantially since the early 1960s. According to CBO estimates, the Roth-Kemp tax cuts would reverse this trend (see Table 13).

This argument for tax cuts of the size proposed in the Roth-Kemp bill is essentially an argument for a smaller public sector. The question whether the electorate and its representatives want fewer public services is, however, largely a political--not economic--matter, which will not be examined here. Nevertheless, some potential economic problems are associated with this type of fiscal policy. In particular, there may be a substantial risk in assuming that spending will be cut in response to tax cuts rather than legislating a reduction. Despite the lower taxes, spending may not be reduced; if not, a much larger federal deficit would result. If this occurred when labor and capital were fully employed, inflation would accelerate rapidly. Many proponents of a Roth-Kemp size tax cut, therefore, believe that spending cuts should also be mandated. In addition, some have proposed that



TABLE 13. EFFECTIVE TAX RATES FOR INDIVIDUALS FOR SELECTED YEARS  
AND UNDER THE ROTH-KEMP PROPOSAL

|   | 1960       | 1965       | 1970       | 1975       | 1977       | Roth-<br>Kemp <u>a/</u> |
|---|------------|------------|------------|------------|------------|-------------------------|
| Personal income<br>taxes as a percent<br>of taxable personal<br>income <u>b/</u>  | 11.3       | 10.4       | 12.3       | 11.3       | 12.5       | 10.5                    |
| Social insurance<br>taxes as a percent<br>of taxable personal<br>income <u>b/</u> | <u>2.5</u> | <u>2.7</u> | <u>3.9</u> | <u>4.7</u> | <u>4.7</u> | <u>5.5</u>              |
| Total <u>c/</u>   | 13.8       | 13.1       | 16.2       | 16.1       | 17.3       | 16.0                    |

a/ Projected for 1981, the first full year of the total tax cut.

b/ Taxable personal income is defined as wages and salaries, proprietors' income, rental income, dividends, and personal interest income.

c/ Components may not add to totals because of rounding.

the tax cut be phased in over a longer period of time or that the reductions be backloaded--that is, made larger in later years--in order to increase the likelihood of achieving corresponding reductions in spending.

#### The Impact of Reductions in Spending

The size of the reduction in spending needed to offset the inflationary impact of Roth-Kemp depends critically on the state of the economy. If nonfederal demands are as strong as assumed in the five-year projection adopted by the Budget Committees, very large spending cuts would be required to offset the inflationary effect of Roth-Kemp. If, on the other hand, the economy is weaker than assumed in the projection, fewer spending cuts might suffice. Similarly, if the tax cuts were phased in more slowly, the offsetting expenditure reductions could be smaller.

The categories in which federal spending is reduced would also affect the size of the cut needed to offset the lower tax rates. Reductions could be accomplished through changes in purchases of goods and services, transfers, grants, or through any combination of these spending categories. A given change in federal purchases is generally believed to affect the economy (in particular, nominal GNP) more than corresponding changes in either taxes or transfers. <sup>1/</sup> The economic impact of reductions in grants to state and local governments is highly variable, depending on the type of program affected. The impact of a reduction in transfer payments is roughly comparable to the impact of the same size increase in personal income taxes. Consequently, if the spending reductions were split equally between purchases and transfers, it is estimated that these cuts would have to be approximately three-quarters the size of the direct costs of the tax cuts in order to offset the latter's impact on nominal GNP and inflation. Since changes in spending and personal income taxes affect the economy with nearly equal speed, reductions in expenditures and tax rates would have to be phased in concurrently.

Table 14 provides some rough indication of the size of the spending cuts that would be necessary to offset the effect of Roth-Kemp, if cuts were divided equally between purchases and transfers. To offset fully the impact of Roth-Kemp on inflation, federal spending by fiscal year 1983 would have to be approximately 20 percent less than under current law. If the impact of Roth-Kemp on the federal deficit is to be offset completely, an additional 10 percent reduction in expenditures would be needed. This latter course of action would lead to a weaker economy than that predicted in the five-year projections adopted by the Budget Committees.

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<sup>1/</sup> Congressional Budget Office, Understanding Fiscal Policy (April 1978), p. 14.

TABLE 14. SPENDING AND TRANSFER REDUCTIONS SUFFICIENT TO OFFSET FULLY THE IMPACT OF THE ROTH-KEMP PROPOSAL ON THE RATE OF INFLATION (CPI) AND ON THE FEDERAL GOVERNMENT DEFICIT: IN BILLIONS OF DOLLARS

| Fiscal Year | To Offset Fully the Impact on Inflation |            |                 | To Offset Fully the Impact on the Deficit |            |                 |
|-------------|---|------------|-----------------|---|------------|-----------------|
|             | Pur-chases                              | Trans-fers | Total <u>a/</u> | Pur-chases                                | Trans-fers | Total <u>a/</u> |
| 1979        | 7.1                                     | 7.1        | 14.1            | 12.8                                      | 12.8       | 25.6            |
| 1980        | 20.9                                    | 20.9       | 41.7            | 35.2                                      | 35.2       | 70.4            |
| 1981        | 37.4                                    | 37.4       | 74.7            | 63.8                                      | 63.8       | 127.6           |
| 1982        | 51.8                                    | 51.8       | 103.6           | 86.4                                      | 86.4       | 172.7           |
| 1983        | 73.7                                    | 73.7       | 147.4           | 112.3                                     | 112.3      | 224.5           |

a/ Components may not add to totals because of rounding.

Table 15 shows that the Roth-Kemp tax reduction proposal with current-policy spending would decrease federal expenditures as a proportion of total GNP. In fiscal year 1979, federal spending would be somewhat less than 22 percent of GNP; five years later, it would be less than 20 percent. With spending cuts sufficient to offset the effect of these tax cuts on prices, however, federal spending would drop to around 17 percent of GNP in 1983. A cut in spending sufficient to offset the effect of Roth-Kemp on the budget deficit would reduce the federal share of GNP still further, to about 15 percent.

Reductions of this magnitude in the federal sector, even when introduced over a period of several years, could lead to some serious economic consequences, which are not fully captured in the standard multiplier analysis used to develop these estimates.

TABLE 15. PROJECTIONS OF FEDERAL SPENDING AND CURRENT-DOLLAR GNP UNDER THE ROTH-KEMP PROPOSAL WITH ALTERNATIVE SPENDING ASSUMPTIONS, FISCAL YEARS 1979-1983: IN BILLIONS OF DOLLARS

|  | 1979    | 1980    | 1981    | 1982    | 1983    |
|--|---------|---------|---------|---------|---------|
| <b>With Taxes Reduced and Spending Projected at Current Policy Levels</b>    |         |         |         |         |         |
| GNP  | 2,267.6 | 2,526.5 | 2,822.7 | 3,148.6 | 3,515.2 |
| Total federal spending   | 493.7   | 545.0   | 589.6   | 646.2   | 700.7   |
| Share of GNP (percent)   | 21.8    | 21.6    | 20.9    | 20.5    | 19.9    |
| <b>With Spending Reduced to Offset the Increase in the Rate of Inflation</b> |         |         |         |         |         |
| GNP  | 2,254.2 | 2,471.5 | 2,704.4 | 2,963.4 | 3,261.5 |
| Total federal spending a/  | 479.6   | 503.3   | 514.9   | 542.6   | 553.3   |
| Share of GNP (percent)   | 21.3    | 20.4    | 19.0    | 18.3    | 17.0    |
| <b>With Spending Reduced to Offset the Increase in the Federal Deficit</b>   |         |         |         |         |         |
| GNP  | 2,224.8 | 2,432.4 | 2,625.0 | 2,852.6 | 3,117.8 |
| Total federal spending a/  | 468.1   | 474.6   | 462.0   | 473.5   | 476.2   |
| Share of GNP (percent)   | 20.9    | 19.5    | 17.6    | 16.6    | 15.3    |

a/ The reduction in spending simply reflects the assumed changes in purchases and transfers shown in Table 14. Other budget components, such as net interest, are assumed to be unchanged.

For example, if job creation programs were particularly hard hit, spending cuts might have larger than estimated effects on employment. More important, there is considerable uncertainty about how easily the economy would adjust to large changes in spending programs.

Smaller reductions in spending to offset inflation could be contemplated if the economy were weaker than projected or if the tax cuts were phased in over a longer period. Furthermore, smaller spending cuts could be enacted if the goal of neutralizing the impact on the rate of inflation were relaxed. For example, Table 16 summarizes the economic impact of reductions in purchases and transfers that are half the size of those in Table 14. As can be seen, gains in constant dollar GNP would be more than half the amount that would be realized with the Kemp-Roth tax reductions alone, while the rate of inflation would be less than 1 percent higher in 1983--significantly less than the incremental impact on prices without spending cuts.

#### CONCLUSION

Full evaluation of any proposal for a broad-based change in taxes involves analysis of such issues as its impact on the distribution of income, the provision of public services, and the effect on economic growth and inflation. But the question of the desirability of the effects of Roth-Kemp on the distribution of income and the size of the public sector is largely a political question, which cannot be resolved by economic analysis. Thus, this paper has focused on the impact of the Roth-Kemp tax reduction proposal on total production, employment, and inflation.

CBO estimates that a commitment to large future tax cuts, unaccompanied by spending reductions, involves a substantial risk of accelerating inflation. Although the inflationary effect of such large tax cuts could be mitigated by large reductions in spending, achieving reductions of that size would be difficult, given the past history of federal spending programs.

TABLE 16. NET INCREMENTAL IMPACT OF HALF THE SPENDING REDUCTIONS  
NEEDED TO OFFSET FULLY THE IMPACT OF THE ROTH-KEMP  
PROPOSAL ON THE RATE OF INFLATION (CPI), FISCAL YEARS  
1979-1983: IN BILLIONS OF DOLLARS

| Economic Variable   | 1979 | 1980 | 1981 | 1982 | 1983 |
|---|------|------|------|------|------|
| Change in Constant<br>Dollar GNP                          |      |      |      |      |      |
| Roth-Kemp (no spend-<br>ing cuts) <u>a/</u>               | 8.3  | 30.7 | 54.5 | 62.8 | 53.3 |
| Half the spending<br>cuts <u>b/</u>                       | 4.3  | 15.4 | 27.2 | 24.6 | 33.6 |
| Change in Inflation Rate<br>(percentage points) <u>c/</u> |      |      |      |      |      |
| Roth-Kemp (no spend-<br>ing cuts) <u>a/</u>               | 0.1  | 0.2  | 1.0  | 1.7  | 2.7  |
| Half the spending<br>cuts <u>b/</u>                       | 0.1  | 0.1  | 0.3  | 0.7  | 0.8  |
| Change in Unemployment<br>Rate (percentage points)        |      |      |      |      |      |
| Roth-Kemp (no spend-<br>ing cuts) <u>a/</u>               | -0.1 | -0.5 | -1.2 | -1.5 | -1.3 |
| Half the spending<br>cuts <u>b/</u>                       | -0.1 | -0.3 | -0.6 | -0.8 | -0.8 |

a/ See Table 13.

b/ See Table 15.

c/ Fourth quarter to fourth quarter of fiscal years.



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## APPENDIX

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## APPENDIX. SUPPLY-SIDE MODELS

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In Chapter III it was stated that most macroeconomic models of the economy are primarily, though not entirely, oriented toward analyzing changes in demand. This statement may be too strong. A letter from Otto Eckstein, included at the end of this appendix, describes the fairly extensive supply-side mechanisms in the DRI model and provides some useful insights into the general issue of supply-side effects.

In addition, a number of attempts have been made by others to model the supply side of the economy, either by adding production-function and factor-supply equations to existing Keynesian models or by constructing full-employment classical models of the economy. In particular, recent interest in how large tax cuts may affect work-leisure decisions and the supply of savings has led to attempts to construct models that explicitly consider the effects of marginal taxes on the supplies of labor and capital. <sup>1/</sup> The attempts to model the supply side of the economy generally have encountered problems involving specification of the model equations and difficulties in estimating the models once specified.

The full-employment equilibrium models appear to have some potential for evaluating the long-run effect of changes in relative prices, but little value in estimating effects of alternative fiscal policies on prices and employment. The U.S. economy has been at full employment for only brief periods and, even if annual data are used, one cannot assume that factor markets will clear in that time interval. Thus, a model that can consider less than full utilization of labor and capital should be used in the analysis of the economic impact of alternative policies.

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<sup>1/</sup> For example, Norman Ture is developing a full-employment equilibrium model, which is not yet available, to test the effect of tax law changes on the supply of labor and capital.



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OTTO ECKSTEIN  
PRESIDENT

July 25, 1978

Ms. Alice Rivlin, Director  
Congressional Budget Office  
U.S. Congress  
Washington, D.C. 20515

Dear Alice:

This is in reply to your request for a description of the supply effects, including the tax influences, in the DRI model of the U.S. economy. Since the model is an 800 simultaneous equation structure, a description of a market economy in which, at least to a degree, everything depends on everything else, it is not a simple task to summarize these effects. A full description would require a small book, so this summary is inevitably incomplete. It should be read in combination with the 200-page model description which is a part of the model documentation volume that we distributed late last year.

#### SUPPLY IN THE DRI MODEL OF THE U.S. ECONOMY

The supply effects in the model versions since 1974 can be classified under the following headings:

1. The supply of materials, as reflected in the production-vendor performance-inventory-capacity equations;
2. The supply of financial capital, as reflected in the 200-equation flow-of-funds sector, which traces personal, business, government and foreign saving through the financial system to the decisions of households and nonfinancial corporations;
3. The supply of physical capital, as calculated for the stock of producers' durable equipment, nonresidential structures, residential structures and household durables;
4. The supply of aggregate output, as measured through an aggregate production function;
5. The supply of labor, as measured by participation rate equations which relate the labor force to the working age population.

#### Supply of Materials

Because the DRI model takes the market approach, prices are the principal vehicle for supply conditions to affect the economy. A scarce supply of materials, such as steel, chemicals, oil, lumber, etc., is shown through high utilization rates, which increase finished goods prices through the stage-of-processing price equations. Besides the utilization effects, the model also contains a separate channel

for vendor performance, the well-known measure of delivery conditions in industrial markets. Poor vendor performance acts in the model to raise industrial prices and to stimulate inventory hoarding.

In considering the determination of the supply of materials, processed materials must be distinguished from raw materials. The supply of processed materials is determined by the capacities of these industries. These capacities, in turn, are determined by the growth in capital stocks and by technology. An industry's capital stock is determined from equations explaining the level of investment. The supply of raw materials is modeled through prices: agricultural commodities and world oil are reflected in exogenous price variables; other raw materials prices are endogenous, moved by the strength of demand, and on the supply side by strike variables. It should be added that DRI's micro models, of numerous industrial and agricultural commodities, do model the availability and costs of supply very elaborately, and this work is an input to the materials forecasts in the macro model.

### **Supply of Finance**

There are both price and quantity effects in the model. Flow-of-funds variables move interest rates through the portfolio behavior of businesses, financial institutions and individuals. Government deficits directly affect the interest rates on government securities, and indirectly all interest rates. Quantity effects on the financial side are also quite pervasive throughout the model. The mortgage market, and therefore the housing industry, are moved in considerable part by the quantity of personal saving that flows through the thrift institutions. The volume of business investment in plant and equipment is affected by the quantity of debt capital, particularly short-term debt capital that is already carried on the business balance sheets. The volume of consumer spending on discretionary items is affected by the quantity of consumer debt already outstanding, along with the extent of household wealth and the size of the debt service burden in relation to income.

### **Supply of Physical Capital**

These elements of supply have two principal roles in the model. First, spending equations contain various stock-flow adjustment processes, with the size of the physical stock in relation to current flows determining current outlays. The business investment equations, the demand for housing, and the demand for such consumer durables as automobiles fall into this category. Second, the supply of physical capital enters into the calculation of potential output through the aggregate production function. Potential output, in turn, is a critical variable in the determination of the inflation rate via the unemployment-wage channel, and is a minor determinant of inflation as a secondary demand variable in some of the price equations.

The supply of physical capital is calculated from investment and depreciation estimates, of course. The model has equations for investment in equipment, nonresidential construction, housing and consumer durables, and these are combined with Department of Commerce estimates of depreciation rates to calculate the respective capital stocks. In the case of automobiles an endogenous equation

determines the scrappage rate, since the economic situation of households clearly is an important variable in determining the disappearance of old equipment from the capital stock.

### **Supply of Labor**

The supply of labor in the model is determined in two steps: the full employment supply of labor is calculated outside of the model. Equations for the supply of labor by sex and age rely on real wages, average real unemployment insurance benefits, average real AFDC benefits, the ratio of young children to adults 25-44, military employment, national unemployment, married male unemployment and time trends beginning in 1950 and 1965 to reflect sociological changes. These equations are discussed in the recent book by Roger Brinner, Technology, Labor and Economic Potential (DRI, 1978), pp. 34-65. The model's labor supply equation draws heavily on this work.

The supply of labor has its largest impact on the model through unemployment, wages, unit labor costs and therefore prices. It also has a secondary effect through the potential GNP channel directly into some prices. Employment in the model is calculated in two ways: aggregate employment is derived from aggregate demand, and is contrasted with labor supply to calculate an estimate of the national unemployment rate. This estimate is used as a check on the Okun's Law estimate of unemployment which has proved to be the more statistically reliable calculation. The model also estimates employment by industry, using production and productivity as the explanatory variables. These industry employment calculations provide a check on the national employment and unemployment estimates.

### **Supply Effects That Are Not Built into the Model Structure**

While the supply matters in the model are quite elaborate and, in terms of equation count, actually represent more than half of the total, perhaps it would aid understanding to discuss two kinds of supply effects that are not presently in the model. They are quantity constraints and multifactor production functions. In the truly planned economy, the planning authority determines the production plan. The largest part of the planning activity consists of determining the production requirements for materials and intermediate goods so they will be consistent and will achieve the planned final product targets. At the theoretical level, the planning authority may seek to optimize the production plan in terms of overall cost or in terms of values attached to the end products. From the theoretical viewpoint, the proper model for this work is a linear or nonlinear programming model in which the constraints are the production relationships and the supplies of basic inputs including the capital stock.

The DRI model is not structured for a planned economy. The United States has a market economy and the model must be built accordingly. The model is useful as a planning tool only in terms of fiscal and monetary policy choices of the sort that are made regularly by the government. For microeconomic planning, whether by government or industry, the model can be a useful component of a fuller modeling system, but it must be combined with micro models focussing on the particular sectoral planning questions.

There are times when the U.S. economy experiences a greater planning ingredient. During the Arab oil embargo and during the period of the Nixon price controls the normal workings of the market economy were partially suspended. A similar situation exists today, to a lesser degree, in the energy field, with the government attempting to regulate some prices and quantities. These situations pose a particular challenge to modeling. On the one hand, a production planning model would be grossly inappropriate for the United States since oil embargoes and price controls are anomalies in a market economy, and hopefully both rare and short-lived. On the other hand, it is impossible to program these situations into the model because it is impossible to predict what particular sectors of the economy will be affected at what particular moment in the future, and to define precisely what questions will be asked and what policy levers will be available when the circumstance finally develops.

The current answer to this planning challenge is to combine macro and micro models. In the case of price controls, the models were very successful in calculating their effectiveness and in estimating the temporary benefits to economic performance from the reduced inflation rate. Neither the DRI model—nor any other system—was able to identify the shortages that developed through disruptions of production and diversion of materials into foreign markets. All that DRI could do in that circumstance was to develop economic information systems that could improve monitoring of what was going on. If controls were to return, the probable shortages could now be calculated somewhat more precisely because of the growth of micro models that could be simulated to estimate production disruptions and diversions into uncontrolled markets.

In the case of energy, a problem likely to be with us for sometime, the answer lies in developing elaborate systems which bridge the macro and the energy models. DRI has a team actively working to make simultaneous solution of the macro and energy models possible. The DRI macro model did well in identifying the general inflationary impact of the energy crisis of 1973-74, but underestimated the degree of disruption of consumer confidence and the degree of financial pressure that was created. The shortcomings in that episode were the main spur to the elaboration of the model, including greater supply and financial effects, since 1974. The model is built quite precisely to take account of energy price effects on the economy, but it is not yet, standing alone, able to sufficiently represent the effects of disruption of supply, nor does it calculate the full effects of price on conservation or productivity. Integration of the macro and energy models will fill this gap.

The other important supply phenomenon which is not modeled sufficiently in the current version of the DRI model is the multifactor aspect of production. Energy, and perhaps other materials, should be added to labor, capital and technology in the aggregate production function. Further, the model should contain a production function of this type for each industry to calculate the effects of particular price changes on the composition of production, the relative use of the different factors of production and their productivity.

## TAX EFFECTS AND SUPPLY

Because of the simultaneous nature of the 800-equation model, it is also somewhat difficult to give a full and precise response to the question of tax effects on supply. Before turning to your specific questions, let me review the tax issue in relation to the five aspects of supply discussed above.

**Taxes and the Supply of Materials:** Corporate taxation affects investment both in the aggregate and by industry. Investment tax credits boost investment in equipment, and lower corporate tax rates reduce the composite cost of capital and augment cash flow. Consequently, lower taxes add to capacity, improve vendor performance and lower industrial prices, other things equal.

**Taxes and the Supply of Finance:** Corporate taxes affect cash flow, adding to finance. The lower cost of capital boosts investment, partially offsetting the extra business liquidity. There is also the extra demand for finance growing out of the enlarged government deficit, but the model does not incorporate one-for-one "crowding out." The crowding out coefficient varies from as low as 0.2 in periods of general slack and over-ample liquidity to near one in periods of extreme credit stringency.

Personal tax reduction leads to an increase in personal saving which strengthens the financial position of households. The personal saving largely flows into housing. Again the crowding out from the enlarged government deficit has to be considered. An exercise is reported below.

**Taxes and the Supply of Physical Capital:** Lower corporate taxes encourage investment and the more rapid formation of physical capital. An exercise is reported below. Lower personal taxes also affect household capital formation, of course.

**Taxes and the Supply of Labor:** The DRI model does not include a tax term in its supply of labor equation. Our statistical tests, as part of our general model building work, did not disclose an identifiable impact. This may or may not be due to the limited range of changes in the personal income tax in the postwar period, which is the basic interval for our analysis. Beyond our own limited work, we also relied on the large body of research in the public finance field. The major empirical studies of the impact of income taxation on the supply of labor have found quite mixed results: some individuals work harder if the tax burden is eased and others work less because their aftertax income goals are achieved with less effort. The best known studies are: Thomas H. Sanders, Effects of Taxation on Executives (Harvard University, Graduate School of Business Administration, 1951); George F. Break, "Income Taxes and Incentives to Work," American Economic Review, September 1957, pp. 529-549; Robin Barlow, Harvey E. Brazer, and James N. Morgan, Economic Behavior of the Affluent (Brookings Institution, 1966); and Daniel M. Holland, "The Effects of Taxation on Effort: Some Results for Business Executives," National Tax Association, Proceedings of the Sixty-second Annual Conference on Taxation (1970), pp. 428-517. While these studies analyze a broad range of experience, mainly in the United States and England, they have been largely confined to business executives and professionals. The more recent studies of the effects of negative income taxes may be casting some

additional light on the relationship between work and taxation. I have not attempted a systematic review of the negative income tax materials, but it is my impression that the preponderant finding of the scholars is that the effects are small or non-existent. The last word has not been said on this subject, but what evidence there is seems to be arguing against strong, measurable impacts of taxation on the supply of labor.

**Taxes and the Supply of Potential:** Besides the capital input which is clearly enhanced by lower taxes, and the supply of labor just discussed, the supply of potential depends on the rate of progress of factor productivity. The DRI model does not contain a tax term in the productivity equations, nor in the aggregate production function, nor am I aware of any study that claims to have such a finding. But this is a matter which has not been studied sufficiently and is certainly worthy of further work.

Let me now turn to your specific questions on taxation and supply.

1. Is the marginal personal tax rate included in the labor supply equation?

Answer: No, as discussed above.

2. What impact, if any, do personal taxes have on consumption-saving-investment decisions?

Answer: A full model simulation is probably the best response to this question. Table 1 shows the impact of a personal tax reduction on the major dimensions of the economy. A \$10 billion personal tax reduction boosts consumption by an almost equal amount four quarters later before the inflation effect destroys much of the real benefit of stimulus. Personal saving is boosted by \$6.4 billion in the fourth quarter and \$6.5 billion in the eighth quarter, and business fixed investment is up by \$1.1 billion and \$2.1 billion. Housing is also aided because the extra personal saving flows through the thrift institutions into the mortgage markets, and because higher real income boosts demand.

3. How does the corporate profits tax rate affect capital accumulation?

Answer: A full model simulation again provides the clearest answer. Table 2 shows the impact of a \$10 billion corporate tax cut. The statutory corporate tax rate is cut by three percentage points and the investment tax credit is increased by three percentage points. The cost of capital is reduced as a result, the service burden ameliorated and total business fixed investment is given a sizeable boost. The general improved prosperity also serves to lift family incomes and consumption, of course. After a while, the stronger economy creates somewhat more inflation and consequently some of the benefits are gradually lost. This occurs despite the supply-boosting and productivity-enhancing effects of the extra capital accumulation.

4. How are long-run effects distinguished from short-run impacts?

Answer: The DRI model is designed to run well both in the short and long runs. The simulation properties are checked through a variety of exercises and we have made numerous changes in the specifics of the equations to assure simulation properties that are consistent with economic theory and general understanding.



Because the model is fully dynamic, with the lag structures obtained by careful statistical work and built into the model, all effects have a time profile. In general, most things in the model take longer than the economic theorist would like to believe, and this is one of the reasons why the model tends to show that economic policies rarely achieve quick results. At the moment, this is clearest in connection with the dollar devaluation: the model calculates the "j curve" effect to stretch out at least six quarters, with a cheaper dollar actually hurting our balance of trade for at least two quarters. The model also shows that the initial response to policies of stimulus is to boost quantity first, with the inflation damage mainly appearing after year two. However, there are some quick inflation effects in sensitive markets, such as some industrial materials and some food prices.

5. Can the models be applied to tax cuts much larger than those encountered during sample periods?

Answer: The 1964 personal tax cut was a 17.5% reduction, while the corporate cut was about 5%. Those cuts were simulated well by the DRI model. The current proposals call for a 33% tax cut which is nearly twice as large. It is a judgemental question whether the models would apply at that magnitude.

Arguing for the applicability of the models is the fact that a 33% reduction on the personal income tax represents only a 17% reduction in the total tax burden. Further, the actual proposals now under consideration do not reduce the top marginal tax rates on work at all. There is now a 50% ceiling on earned income and I am not aware of any proposal to reduce it. Thus, it is only the rates below 50% that would be changed as far as the income from work is concerned. The reduction of income from dividends, interest and rent would be cut by about 30%, of course. Arguing against the applicability of the large models is our limited knowledge of the effects of the tax system on productivity and the inconclusive findings of the effects of taxation on the supply of labor. My judgement would be that a 33% reduction in the personal income tax burden, following a 32.7% increase in that burden since 1965, is not enough to fall outside the range of applicability. The fact is that even the massive cuts now being proposed do not go that much beyond the increases created by inflation and the rising burden of government expenditure.

A point of "no applicability" can be reached, of course. A "Laffer curve" stretching from a tax system which takes 100% of income to no taxes at all cannot be traced out with a macro model. The 100% tax burden would represent either a slave or a communist economy, or both. It would be governed by non-market principles. The "no tax" point of the Laffer curve would also be hard to model realistically since, without a government, our country would quickly fall prey to the totalitarian forces loose in the world.

If you would like to pursue any of these matters further, please let me know. I will also keep you posted on the work that DRI is doing to integrate further supply effects, particularly in the energy field, and to dig more deeply into the questions of taxation, productivity and labor supply.

Sincerely,



**TABLE 1**  
**Impact of a \$10 Billion Personal Tax Cut<sup>1</sup>**

|   | Quarters After<br>Policy Change |      |      |      |      |
|---|---------------------------------|------|------|------|------|
|   | 2                               | 4    | 6    | 8    | 10   |
| <b>The Economy</b>                                  | (Billions of Dollars)           |      |      |      |      |
| GNP   | 7.8                             | 11.8 | 12.0 | 14.6 | 16.3 |
| Consumption   | 6.9                             | 9.8  | 9.7  | 13.3 | 14.9 |
| Business Fixed Investment                           | 0.5                             | 1.1  | 1.7  | 2.1  | 2.1  |
| Residential Construction                            | 0.6                             | 0.8  | 0.5  | 0.3  | 0.1  |
|   | (Billions of 1972 Dollars)      |      |      |      |      |
| GNP   | 5.0                             | 6.8  | 5.9  | 6.4  | 6.1  |
| Consumption   | 4.6                             | 6.0  | 5.3  | 6.8  | 6.9  |
| Business Fixed Investment                           | 0.3                             | 0.5  | 0.7  | 0.8  | 0.7  |
| Residential Construction                            | 0.3                             | 0.4  | 0.1  | -0.1 | -0.2 |
| <b>Inflation and Unemployment</b>                   | (Difference in Rate)            |      |      |      |      |
| GNP Deflator  | —                               | 0.1  | 0.1  | 0.1  | 0.1  |
| Compensation Per Manhour                            | 0.1                             | 0.2  | 0.1  | 0.1  | 0.1  |
| Unemployment Rate                                   | -0.1                            | -0.2 | -0.2 | -0.2 | -0.1 |
| <b>Incomes</b>                                      | (Billions of Dollars)           |      |      |      |      |
| Disposable Income                                   | 13.6                            | 16.5 | 17.7 | 20.4 | 22.9 |
| Personal Savings                                    | 6.5                             | 6.4  | 7.5  | 6.5  | 7.1  |
| Savings Rate (Difference in Rate)                   | 0.4                             | 0.4  | 0.4  | 0.3  | 0.3  |
| Aftertax Corporate Profits                          | 1.5                             | 1.8  | 1.6  | 1.4  | 1.2  |
| <b>Interest Rates</b>                               | (Difference in Rate)            |      |      |      |      |
| 3-Month Treasury Bill Rate                          | 0.11                            | 0.19 | 0.24 | 0.28 | 0.31 |
| Corporate New Issue Rate                            | 0.05                            | 0.08 | 0.11 | 0.14 | 0.18 |
| <b>Federal Budget</b>                               | (Billions of Dollars)           |      |      |      |      |
| Personal Taxes                                      | -9.5                            | -9.3 | -9.5 | -9.7 | -9.9 |
| Total Receipts                                      | -8.0                            | -7.2 | -7.6 | -7.4 | -7.6 |
| Surplus or Deficit (NIA)                            | -7.9                            | -7.1 | -7.8 | -8.1 | -8.8 |
| (- indicates a smaller surplus or a larger deficit) |                                 |      |      |      |      |

<sup>1</sup> Monetary policy assumed neutral, i.e. supply of nonborrowed bank reserves left unchanged.

**TABLE 2**  
**Impact of a \$10 Billion Corporate Tax Cut<sup>1</sup>**

|   |                            | Quarters After<br>Policy Change |      |      |       |
|---|----------------------------|---------------------------------|------|------|-------|
|   | 2                          | 4                               | 6    | 8    | 10    |
| <b>The Economy</b>                                  |                            |                                 |      |      |       |
|   | (Billions of Dollars)      |                                 |      |      |       |
| GNP   | 3.4                        | 7.3                             | 13.2 | 18.7 | 22.5  |
| Consumption   | 0.8                        | 2.0                             | 3.9  | 6.1  | 8.6   |
| Business Fixed Investment                           | 0.9                        | 3.9                             | 7.9  | 11.3 | 13.6  |
| Residential Construction                            | —                          | 0.1                             | 0.1  | -0.4 | -1.2  |
|   | (Billions of 1972 Dollars) |                                 |      |      |       |
| GNP   | 2.0                        | 4.2                             | 7.1  | 9.1  | 9.6   |
| Consumption   | 0.5                        | 1.2                             | 2.0  | 2.8  | 3.4   |
| Business Fixed Investment                           | 0.5                        | 2.3                             | 4.5  | 6.2  | 7.1   |
| Residential Construction                            | —                          | —                               | —    | -0.3 | -0.8  |
| <b>Business Incentives</b>                          |                            |                                 |      |      |       |
|   | (Percent Difference)       |                                 |      |      |       |
| Cost of Capital                                     | -2.8                       | -2.4                            | -2.0 | -1.7 | -1.6  |
| Debt Service  | -5.8                       | -5.9                            | -5.7 | -5.3 | -4.3  |
| Retained Earnings (billions of dollars)             | 10.5                       | 11.1                            | 11.4 | 12.0 | 11.8  |
| Manufacturing Capacity                              | —                          | 0.1                             | 0.2  | 0.4  | 0.8   |
| <b>Nonfinancial Corporate Sector</b>                |                            |                                 |      |      |       |
|   | (Billions of Dollars)      |                                 |      |      |       |
| Cash Flow   | 8.8                        | 9.2                             | 9.6  | 10.6 | 11.0  |
| Physical Investment                                 | 2.3                        | 4.5                             | 7.9  | 10.9 | 12.2  |
| Cost of Capital (percent difference)                | -3.5                       | -3.1                            | -2.7 | -2.4 | -2.2  |
| Net Worth   | 7.0                        | 10.5                            | 13.4 | 16.0 | 18.4  |
| <b>Inflation and Unemployment</b>                   |                            |                                 |      |      |       |
|   | (Difference in Rate)       |                                 |      |      |       |
| GNP Deflator  | —                          | 0.1                             | 0.1  | 0.2  | 0.2   |
| Compensation Per Manhour                            | —                          | 0.1                             | 0.1  | 0.1  | 0.2   |
| Unemployment Rate                                   | —                          | -0.1                            | -0.2 | -0.2 | -0.2  |
| <b>Incomes</b>                                      |                            |                                 |      |      |       |
|   | (Billions of Dollars)      |                                 |      |      |       |
| Disposable Income                                   | 1.6                        | 3.8                             | 7.5  | 11.2 | 14.9  |
| Personal Savings                                    | 0.9                        | 1.7                             | 3.5  | 4.7  | 5.6   |
| Aftertax Corporate Profits                          | 11.0                       | 12.3                            | 13.4 | 14.8 | 15.4  |
| <b>Interest Rates</b>                               |                            |                                 |      |      |       |
|   | (Difference in Rate)       |                                 |      |      |       |
| 3-Month Treasury Bill Rate                          | 0.04                       | 0.09                            | 0.19 | 0.33 | 0.44  |
| Corporate New Issue Rate                            | 0.03                       | 0.03                            | 0.08 | 0.14 | 0.20  |
| <b>Federal Budget</b>                               |                            |                                 |      |      |       |
|   | (Billions of Dollars)      |                                 |      |      |       |
| Corporate Taxes                                     | -9.7                       | -9.5                            | -9.4 | -9.9 | -10.9 |
| Total Receipts                                      | -9.0                       | -8.0                            | -6.5 | -5.5 | -5.2  |
| Surplus or Deficit (NIA)                            | -9.0                       | -8.0                            | -6.6 | -5.9 | -6.1  |
| (- indicates a smaller surplus or a larger deficit) |                            |                                 |      |      |       |

<sup>1</sup> Three percentage point reduction in statutory corporate tax rate from 48% to 45%.  
Three percentage point increase in the investment tax credit rate from 10% to 13%.  
Monetary policy assumed neutral, i.e. supply of nonborrowed reserves left unchanged.



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