EFFECTS OF THE 1981 TAX ACT ON THE

DISTRIBUTION OF INCOME AND TAXES PAID

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CONTENTS

SUMMARY

In the Economic Recovery Tax Act of 1981 (ERTA), the Congress lowered the top marginal tax rate on individual income from 70 to 50 percent, reduced other marginal tax rates by 23 percent over a three-year period, and enacted a number of other provisions that reduced individual tax payments and lowered taxes on the business income of both individuals and corporations. The corporate tax reductions in ERTA were partially offset later by the provisions of the Tax Equity and Fiscal Responsibility Act of 1982 (TEFRA).

ERTA also provided for indexation of personal exemptions, the zero bracket amount (ZBA), and the width of tax brackets to changes in the Consumer Price Index beginning in 1985. Because indexing did not take effect immediately, however, the real value of personal exemptions, the ZBA, and bracket widths continued to decline between 1980 and 1984.

This paper examines the effects of ERTA and TEFRA on changes in the distributions of individual income tax payments and after-tax incomes between 1980 and 1983. The total change in the distribution of tax payments is separated into a "static" component attributable only to the tax changes, and a component labelled "feedback and other" that is attributable to changes in the distribution of pretax income. The latter changes reflect effects of the tax changes on the percentage of income received in taxable forms in different income classes, and the effects of changes in economic conditions. Particular attention is directed toward behavioral responses, especially those for taxpayers in the upper 1 percent of the income distribution.

OVERALL DISTRIBUTIONAL CHANGES

Between 1980 and 1983, the share of individual income taxes paid by taxpayers in the top 1 percent of the income distribution increased from 19.1 percent to 20.6 percent. This increase occurred even though the group experienced the largest reduction in average tax rates. Other taxpayers in the top half of the income distribution paid a lower share of taxes over this period, notably those between the 2nd and 25th percentiles of the income distribution, whose share fell from 54.1 percent to 52.7 percent. The share of taxes paid by taxpayers in the next highest quartile fell slightly, while the share of taxes paid by taxpayers in the bottom half of the income distribution increased slightly from 6.9 percent to 7.0 percent.

The principal reason why those in the top percentile paid an increased share of taxes was that their incomes grew faster. Income for this group increased by 42.4 percent between 1980 and 1983, compared to a 24.5 percent growth for income averaged over all returns. A major component of this relatively greater income growth was realized capital gains. For the top percentile, realized capital gains increased by 89 percent between 1980 and 1983 and were responsible for more than the entire difference between the growth in income in the top percentile and the growth averaged over all returns.

The tax system was less progressive in 1983 than in 1980, despite the increased share of taxes paid by the top percentile. Summary measures based on the distribution of after-tax income, arguably the best way to determine progressivity, show that the distribution of after-tax income was less equal in 1983 and that the tax system had a smaller effect in reducing inequality.

It is important to note that an increase in the share of after-tax income received by high-income groups does not necessarily mean that other groups are becoming worse off in absolute terms. Tax reductions that raise the income share and tax payments of upper income groups can also increase the after-tax incomes of lower income groups if (1) increased saving or work effort by those in the top bracket, by adding to the capital stock or the availability of skilled labor, increases real wages for all groups over time or (2) if higher tax payments by upper-income groups allow for larger tax reductions for lower-income groups. The first of these effects would be expected to appear only in the longer term, while the second would occur only as a result of subsequent legislative action.

Such effects cannot be detected in the 1980-1983 data. During this period, the real after-tax income per return in the bottom half of the income distribution declined by almost 3 percent and remained virtually constant for returns in the next highest 25 percent of the income distribution. For the top percentile of returns, the increase in real after-tax income per return was almost 23 percent.

Individual income tax revenue in 1983 was about $40 billion below the level that would have resulted if all incomes and deductible expenses had grown at the same rate as average personal income per capita between 1980 and 1983, and if average tax rates had been held constant. As mentioned above, the estimated reduction in revenue can be decomposed into two parts: (1) a "static" component attributable to the direct effect of the tax cuts measured at a constant 1983 level and distribution of income and (2) a component labelled "feedback and other" attributable only to changes in the distribution, but not the level, of income between 1980 and 1983.

The component labelled "feedback and other" includes changes in taxable income that may be tax-induced, but also could be independent of changes in the law. These changes include increases in realized capital gains and earnings, shifts from tax-exempt or tax-deferred income to taxable income, and reductions in tax-deductible expenditures. They may have been induced by changes in the tax law, but may also have been caused by other economic events, such as the 1981-1982 recession, the stock market boom in 1982-1983, changes in market interest rates and deregulation of financial institutions. Because total income growth in the no tax change case is assumed to be the same as actual growth, the question of the effect of the tax cuts on total economic growth is not addressed.

STATIC EFFECTS

The static analysis of ERTA shows that the direct benefit from tax changes between 1980 and 1983 was proportionately greater in the highest income groups. At a 1983 level and distribution of income, tax payments in the top percentile of tax returns were about 15 percent less than they would have been if 1980 tax law had remained in effect but had been indexed to average growth in per capita personal income. In contrast, tax payments in the second quartile of returns were 9 percent lower than they would have been under indexed 1980 law while tax payments in the bottom half of the income distribution were 3 percent higher than they would have been under indexed 1980 law.

This pattern of tax changes resulted from a combination of factors. The benefits from the reduction in marginal tax rates were distributed proportionately across income classes. The benefits from the major changes in the definition of the tax base went primarily to taxpayers in the upper part of the income distribution. The reduction of the value of personal exemptions, the ZBA, and bracket widths relative to income raised taxes proportionately the most for taxpayers in the bottom half of the income distribution. Consequently, when measured at the 1983 level and distribution of income, the relative position of taxpayers in the bottom half of the income distribution worsened between 1980 and 1983, while the position of taxpayers in the top 1 percent of the income distribution improved the most.

The static effect is the best measure of the initial impact of tax policy changes on the well-being of taxpayers. But such changes can also affect the economic decisions of taxpayers, who can increase their benefits or reduce their losses by changing their behavior. These behavioral changes may increase or decrease taxes paid, but will always make taxpayers better off than they were immediately after the change in tax policy. For example, if high-income taxpayers choose to sell assets so as to realize more capital gains when tax rates are lowered, their tax payments will increase but this will be more than offset by the in-

crease in the value to them of higher realized income. Because the total change in the distribution of tax payments may include some induced behavioral response, it does not accurately reflect the distribution of benefits from tax changes.

FEEDBACK AND OTHER EFFECTS

The study finds no evidence that behavioral responses to the tax cuts resulted in any overall revenue feedback effects for the vast majority of the taxpaying population. In the aggregate, changes in the distribution of income, the use of deductions, and the realization of taxable income relative to total personal income are estimated to have had virtually no effect on total taxes paid. The estimated total revenue loss of $39.5 billion was slightly greater than the estimated static loss of $38 billion.

For the top percentile, however, "feedback and other" effects offset over half (about 60 percent) of the static revenue reduction. Virtually all of this was accounted for by increased realizations of capital gains and increased wage and salary income. It is plausible that the higher incomes may have resulted from changes in behavior induced by the tax rate changes, which increased marginal after-tax income per dollar of pretax capital gains and wages by a greater percentage for people in this group than for other taxpayers.

The increase in capital gains in the top percentile between 1980 and 1983 can be explained in part by the reduction in marginal rates on capital gains and in part by the fact that over time realized capital gains have been rising proportionately faster than other income and also stock prices. The 1983 increase in capital gains realizations, however, was much larger than predicted by historical relationships, suggesting that tax rates were not responsible for all of the increase. The growth in wage and salary income in the top percentile may also be attributed in part to behavioral responses. However, in light of estimates from studies of labor supply behavior, the increase in wage and salary income exceeded the expected response to lower marginal tax rates. Another reason for the relatively larger wage and salary growth in high-income groups may have been the increase in unemployment between 1980 and 1983, because high unemployment disproportionately reduces earnings growth for low-income groups.

Once more, it is important to emphasize that this study does not incorporate all possible types of behavioral and feedback effects and in particular assumes that the overall growth rate of income was unaffected by the tax changes. Estimation of the effect of the tax changes on the overall growth rate during the 1980-1983 period is very difficult. It can be said, however, that the effect would have had to be very large to contradict the study's finding that the tax cut of 1981, as modified by TEFRA, reduced tax revenues. The over-

all growth rate was probably somewhat affected by behavioral responses, however, and such responses may have more effect in the longer run.

The study does provide insight into the differences among behavioral responses of specific income groups to changes in tax rates and suggests that future researchers should carefully examine such responses by the highest income class, especially the effect on capital gains realizations.

I

CHAPTER I

INTRODUCTION

BACKGROUND

In the Economic Recovery Tax Act of 1981 (ERTA), the Congress lowered the top marginal tax rate from 70 percent to 50 percent, reduced other marginal tax rates across the board by 23 percent over a three-year period, and enacted a number of other provisions that reduced individual income tax payments. These provisions included a new deduction for married couples when both spouses work and a substantial liberalization of the deduction for contributions to tax-deferred individual retirement accounts (IRAs). ERTA also lowered taxes on the business income of both individuals and corporations by allowing more accelerated depreciation deductions, expanding the investment tax credit, and introducing a number of new investment incentives, including a new credit for research and experimentation. Later, the corporate tax reductions in ERTA were partially offset by provisions in the Tax Equity and Fiscal Responsibility Act of 1982 (TEFRA) that scaled back the accelerated depreciation benefits in ERTA, repealed safe harbor leasing, and reduced a number of other corporate tax preferences.

This paper assesses the effects of ERTA and TEFRA on the distribution of individual income taxes and the distribution of after-tax income between 1980 and 1983, based on data from individual income tax returns. Changes in tax law can affect tax liability both directly, by changing the method of computing tax liability for a given level of income, and indirectly, by inducing changes in the working, spending, or investment behavior of taxpayers in ways that alter the tax base. A major concern of the paper is to examine the extent to which behavior induced by the tax changes may itself have affected the distribution of tax payments.

To analyze this issue, the distributional data are evaluated from three related perspectives. First, the study shows how the distribution of taxes paid and after-tax income actually changed between 1980 and 1983 and how much different components of income and deductions contributed to the changes in the distribution of taxes paid. Second, it shows the changes in the distribution of taxes and after-tax income attributable only to changes in the tax law, holding the 1983 distribution of income fixed. This can be called the "static" effect of the tax policy changes, since its calculation is based on the assumption that

the tax base was unaffected by any changes in incentives associated with changes in the tax law. The paper then compares the "static" changes in the distribution of tax payments to the actual changes to estimate the distributional effects of induced or behavioral responses to the tax changes.

The paper pays particular attention to changes in tax payments by taxpayers in the top percentile of the income distribution. Very-high-income taxpayers are emphasized because induced behavioral responses to the tax cuts were most important for them.

METHODOLOGICAL ISSUES

Any measurement of the behavioral effects of tax policy changes must be conjectural at best. Tax payments that would have been made if there had been no induced changes in economic behavior cannot be observed; however, an estimate of this is needed as a baseline against which actual tax payments can be compared. Many factors other than behavioral responses to taxation can alter the level and distribution of incomes and tax payments. A simple comparison between tax payments before and after the policy change is clearly faulty because incomes and taxes generally grow over time. Exactly how much income and the use of deductions in different income groups would have grown if tax policy had remained fixed is, however, unknown.

It should be further noted that any apparent induced behavioral changes measured over a three-year period can misrepresent the long-run effect of tax changes because some induced effects will occur only over a long period of time, while some measurable short-term effects may only be temporary. For example, induced effects on revenues attributable to induced saving will be trivial in the first few years after the tax change because a higher savings rate will initially have very little effect on the overall size of the capital stock, and thus on national income and product. Even if there is a significant induced effect on the savings rate, the long run revenue gains will take years to materialize. Alternatively, taxpayers may accelerate deductions and delay recognition of income in the first years of a tax change in anticipation of lower rates (especially if legislated rate changes are phased in gradually) or may be encouraged by rate reductions to accelerate realizations of capital gains from old investments (leaving fewer remaining gains to be realized in later years)--both temporary reactions to tax changes.

Construction of the Baseline

In the analysis in this paper, the 1983 baseline data are constructed by increasing all income items and deductible expenses reported on 1980 returns by the average growth rate of nominal personal income per capita between 1980 and 1983. That is, the baseline assumes that ERTA and TEFRA did not affect the

overall growth of the economy in that period. In fact, nominal income grew more slowly between 1980 and 1983 than in the late 1970s, as the economy dropped into a major recession and the inflation rate declined. Income growth might have been even lower if the tax cuts had not been enacted.[1]

Thus, any inferences about the effects of ERTA and TEFRA on behavior in this paper focus mostly on how the tax changes may have affected the distribution of income among groups. That is, the use of this baseline permits one to identify a possible behavioral response if groups that experienced a relatively large tax rate reduction also experienced a larger-than-average growth in income between 1980 and 1983. A behavioral response can also be identified if taxable income increased relative to total personal income. An increase in taxable income relative to personal income could reflect taxpayer behavior either through an increase in the ratio of taxable to nontaxable sources of income [2] or through a decrease in the ratio of deductible expenses to income. [3]

To summarize, possible induced revenue gains from lowering tax rates can be identified in two situations. One is where the use of deductions allowable on the same terms in 1983 as in 1980 decreased, and income from taxable sources increased, relative to total personal income. The other is where the distribution of taxable income shifted toward higher-income groups with relatively higher tax rates.

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1. Nominal personal income per capita increased by 21.9 percent between 1980 and 1983, compared to a growth of 35.9 percent in the preceding three years. Part of the decline in the growth rate of income in the first three years including and following the enactment of ERTA can be attributed to the decline in the rate of inflation after 1981 and part to the decline in real income during the 1981-82 recession. (Real personal income per capita—measured as personal income deflated by the GNP deflator for personal consumption expenditures—increased by only 1.6 percent between 1980 and 1983, compared to an increase of 4.7 percent in the preceding three years.) Given the strong influence of monetary policy, the overall federal budget, and other factors on short-term economic fluctuations, the data do not permit any inferences on whether the tax cut added to, partially offset, or had no relationship to the slower growth in nominal personal income per capita during this period.

2. This could occur in several ways. A rise in the ratio of money wages and salaries to personal compensation would increase the share of income that is taxable because most non-monetary compensation (in particular, employer contributions to qualified retirement plans and to medical insurance plans) is tax-exempt. A rise in the proportion of investment income that is taxable would occur if people held relatively fewer tax-sheltered investments. An increase in the ratio of capital gains realizations to personal income would also increase the ratio of taxable income to personal income because realized capital gains are not included in personal income, as measured in the national income and product accounts.

3. The major deductions that could change relative to income, because of behavioral responses, are deductions for interest paid, charitable contributions, and medical expenses. The amount of state and local taxes deducted could also change, but that would involve changes in tax law by states and localities that might or might not be a response to changes in federal taxation.

Static Effects

The direct effects of changes in tax rates and the legal definition of the tax base on tax liabilities will be measured separately and labelled static effects. These include changes in taxes paid brought about by the major 1981 and 1982 changes in the tax law. Major changes in the tax law affecting individuals in 1983 include the reduction in marginal tax rates between 1980 and 1983, the liberalization of IRA provisions, and the introduction of the second-earner deduction. Static effects also include offsetting increases in average tax rates that occurred as nominal income growth moved taxpayers into higher tax rate brackets and eroded the relative size of personal exemptions and the zero bracket amount (ZBA). [4] The rate cuts and other major provisions in ERTA more than offset this effect of "bracket creep" for the top income groups, but not for the bottom half of the income distribution (see Chapter III).

TABLE I.1.   STEPS IN CONSTRUCTION OF BASELINE AND IN THE
              MEASUREMENT OF STATIC AND FEEDBACK EFFECTS

	Income Level	Tax Law	Income Distribution
(1) Actual 1980	1980	1980	1980
(2) Baseline a/	1983	1980, indexed	1980
(3) 1980 Law on 1983 Incomes	1983	1980, indexed	1983
(4) Actual 1983	1983	1983	1983

NOTE: Total Change = (4) minus (2)
      Static Effect = (4) minus (3)
      Feedback and Other = (3) minus (2)

a.   Personal exemptions, ZBA, and bracket widths indexed to growth in nominal personal
      income per capita between 1980 and 1983.

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4. This phenomenon is referred to as "bracket creep." ERTA included a provision that indexed personal exemptions, the ZBA, and the width of other rate brackets to changes in the Consumer Price Index, for tax years beginning in 1985. As a result, taxpayers no longer are moved into higher tax brackets by inflation, although there remains some "bracket creep" from real economic growth. Between 1980 and 1983, both inflation and real growth automatically moved taxpayers into higher tax brackets, thus eroding part of the benefit from lower statutory tax rates.

Table I.1 summarizes the steps used to construct the baseline and to measure changes in taxes paid by different income groups, beginning with actual 1980 data (line 1). The 1983 baseline (line 2) represents the levels of income and taxes that would have been paid in 1983 under indexed 1980 tax law. As noted above, baseline levels of income and deductions per tax return for each income group are computed by multiplying the actual 1980 levels by the ratio of per-capita personal income in 1983 to per-capita personal income in 1980. Thus, all incomes are increased to 1983 levels while the 1980 distribution is maintained. The 1980 tax rate structure and allowable deductions are also maintained, but the value of personal exemptions, the ZBA, and bracket widths are multiplied by the ratio of 1983 to 1980 personal income per capita in order to keep average tax rates unchanged (defined here as "indexed law").[5] This indexed 1980 tax law is then applied to baseline 1983 incomes to compute baseline taxes.

The total revenue change is measured as the difference between lines 4 and 2, where line 4 is actual taxes paid in 1983. The change from line 2 to line 4 is then subdivided into two parts by estimating taxes that would have been paid if indexed 1980 law had been applied to actual 1983 incomes (line 3). The difference between lines 2 and 3 is the revenue effect of changes in the distribution of income under 1980 tax law. This part is labelled "feedback and other" because it includes changes in revenues that may have been induced by behavioral responses to the new tax rates. The difference between lines 3 and 4 is labelled the "static" effect because it measures the change in revenues attributable only to changes in the tax law applied to fixed incomes.

The Problem of Rank Reversals

The data base used for the comparisons of 1980 and 1983 income and taxes is the Public Use Individual Income Tax Model File produced by the Statistics of Income (SOI) Division of the Internal Revenue Service. The SOI data file is a stratified sample of over 120,000 tax returns, weighted to add up to the total taxpaying population. The study uses separate SOI data files produced for 1980 and 1983 tax returns.

One limitation of these data files for comparisons of taxes paid over time is that they do not allow the tracking of the same taxpayers in different years. Therefore, these data provide fully accurate measures of changes in income and taxes for any given group of people only if people stay within the same income groups over time. Thus, a statement that the top income group experien-

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5.   Note that the personal exemptions, ZBA, and bracket widths are greater under indexed 1980 law than under actual 1983 law.

ced an above average growth in income does not necessarily mean that individual taxpayers who were in the top group in 1980 actually experienced that income growth. It is possible that some people in the top group in 1980 experienced little growth and were in lower groups in 1983, while others starting below the top group in 1980 moved into the top group in 1983. A large growth in income of this latter group could cause aggregate income in the top group in 1983 to be much higher than income in the top group (composed of a different population) in 1980.

This movement of taxpayers between income groups can be referred to as "rank reversal." Rank reversals would cause serious problems in interpreting the results only if many taxpayers switched their relative position in income groupings between 1980 and 1983. If relative rankings in the income distribution are fairly stable, the problem is minimized and use of the data to show how taxes and incomes changed for particular groups in the population can be justified. In any case, the data show unambiguously how the size distribution of income, taxes paid, and other items on the data file changed between the two years, even though the change in income cannot be calculated for any chosen group of individual taxpayers. [6]

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6. If one had a panel file that sampled the same group of taxpayers every year, one could see whether taxpayers were shifting between income groups. Such a data file was not available to CBO. Even if it were, however, the interpretation of changes in income and taxes within income groups could be ambiguous if there are rank reversals. For example, suppose some taxpayers in the top income group in 1980 fall out of that group by 1983, while others move into the top group. If income in the top group is growing, a comparison between income in the top group in 1983 and income in the top group in 1980 overstates the growth of income of taxpayers who were in the top group in 1980 because their income is below the average for the 1983 top group. At the same time, such a comparison understates the growth of income for people in the top group in 1983 because they had income below the average for the 1980 top group. This problem occurs because there is more than one measure of the "top" group when taxpayers are moving between groups.

Comparison with Methodology of Earlier Work

A number of earlier analyses have concluded that ERTA increased the share of taxes paid by the highest income group. Some have inferred that ERTA therefore improved the "fairness" of the tax system.[7] Others have criticized these analyses on a number of methodological grounds. [8] This study differs from earlier work in the following respects:

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7. See, for example, "Tricklenomics,", *The Wall Street Journal* editorial, April 11, 1984; "The Panic of 1984," *The Wall Street Journal* editorial, May 7, 1984; James Gwartney and Richard Stroup, "The Redistributionist Tax Reduction," *The Wall Street Journal*, June 26, 1984; Richard Vedder and Phillippe Watel, "The Impact of Marginal Tax Rate Changes in the United States, 1954-82," *Tax Notes*, November 19, 1984; Richard Vedder and Lowell Gallaway, "The Changing Burden of the Federal Individual Income Tax, 1981-1983," *Tax Notes*, March 25, 1985; and Richard Vedder and Lowell Gallaway, "Income Shares and the Supply Side: A Reply," *Tax Notes*, June 10, 1985.

    The most detailed and sophisticated of these studies is the work by Lawrence Lindsey. See Lawrence B. Lindsey, "Taxpayer Behavior and the Distribution of the 1982 Tax Cut" (Cambridge, MA: National Bureau of Economic Research, October 1985), Working Paper No. 1760; and Lawrence B. Lindsey, "Estimating the Revenue-Maximizing Top Personal Tax Rate," NBER Working Paper No. 1761, 1985. Lindsey also compares the actual distribution of income to an explicit, projected baseline and uses this comparison to estimate how ERTA affected the distribution of tax payments in 1982.

    Appendix A provides a brief chronology of other articles and studies on this topic and a more detailed comparison of the methodology used in this study with that used by Lindsey.

8. See, for example, John Berry, "Tax Cuts Aren't Working As Promised," *Washington Post*, April 22, 1984; Joseph Minarik, "The Tax Shares Boomlet," *Tax Notes*, June 11, 1984; Kenneth Simonson, "Supply Side Tax Changes: Do They Soak the Rich or Sock it to the Poor?" *Tax Notes*, June 11, 1984; Donald Kiefer, "The 1982 Tax Return Data and Supply-Side Responses to the Tax Cut: Manifestation or Mirage?" Congressional Research Service Report 84-702E (July 31, 1984); Michael Schuyler, "The Fairness of the 1981 Tax Reductions," *Tax Notes*, August 20, 1984; and Albert J. Davis, "Income Tax Shares and the Supply Side: A Comment on Vedder and Gallaway," *Tax Notes*, April 15, 1985. Some of these articles criticize the analyses that conclude that the 1981 tax act improved the fairness of the tax system, while others caution that it is too early to draw definitive conclusions.

<u>Grouping by Percentile</u>. Some of the earlier work looked at published data on the changes in tax payments by fixed income group and found, for example, that the share of taxes paid by those with incomes over $100,000 increased after 1981. [9] A finding that the share of taxes paid by those above a fixed dollar-denominated level of income increased over time is, however, meaningless because inflation and economic growth tend to move returns into higher income classes each year. This problem is avoided by ranking taxpayers by percentile of the distribution, instead of by an income level.[10]

<u>Classification by Expanded Adjusted Gross Income</u>. Previous analyses have ranked taxpayers by level of adjusted gross income (AGI). One problem with using AGI as a measure of income for such studies is that the <u>definition</u> of AGI in the tax law was changed in significant ways between 1980 and 1983. These changes affected both exclusions from gross income and adjustments to income. The most important changes were the liberalization of deductions from gross income for contributions to IRAs and the introduction of a new deduction for two-earner married couples. In addition, the $100 dividend exclusion was replaced by a $200 exclusion for both interest and dividends in tax year 1982 and a portion of interest (from "All-Savers" Accounts) was excluded from AGI in 1982 and 1983. To derive a consistent income classifier, CBO added back IRAs, second earner deductions, and other exclusions from gross income that are reported on tax returns (including the capital gains deduction) to obtain a broader measure of income, referred to here as expanded adjusted gross income (EAGI).[11] (Appendix B describes EAGI in detail.)

In this study, returns are ranked by EAGI and grouped by percentiles of the EAGI distribution. The percentile groups used are: (1) the top percentile of tax returns, (2) the 2nd-5th percentiles, (3) the 6th-25th percentiles, (4) the 26-50th percentiles, and (5) the 51st-95th percentiles. Table I.2 shows the per-

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9. See, for example, *Wall Street Journal*, "Tricklenomics," *Wall Street Journal*, "Panic of 1984," and Vedder and Watel, "Impact of Marginal Tax Rate Changes."

10. A number of analyses rank taxayers by percentile in the distribution of adjusted gross income (AGI). These include Lindsey, "Taxpayer Behavior," Gwartney and Stroup, "Redistributionist Tax Reduction," Vedder and Gallaway, "Changing Burden of the Federal Income Tax," Davis, "Comment on Vedder and Gallaway," and Vedder and Gallaway," A Reply." As discussed below, this study classified tax returns by percentile of expanded adjusted gross income (EAGI), a more comprehensive measure of income than AGI.

    Classification by EAGI percentile, however, does not remove the problem of rank reversals, as discussed above.

11. The definition of EAGI also changed slightly because changes in depreciation rules affected the measurement of business, partnership, and farm income. Thus, a taxpayer holding shares of a partnership might experience a reduction in EAGI because of reduced partnership income, even though that reduced income reflected changes in the timing of allowable depreciation deductions by the partnership rather than any change in a consistent measure of net profits.

centile groups and corresponding EAGI levels for the return with the least EAGI in each group.

TABLE I.2.   EXPANDED ADJUSTED GROSS INCOME GROUPS (In thousands)

	Expanded Adjusted Gross Income Group				
	Group 1 (1%)	Group 2 (2-5%)	Group 3 (6-25%)	Group 4 (26-50%)	Group 5 (51-95%)
			Dollar Cut-Offs a/		
1980	85,860	44,820	23,820	12,930	1,240
1981	102,970	53,010	27,270	14,970	1,430
1982	97,340	51,360	27,500	14,590	1,420
1983	103,820	55,110	28,690	15,210	1,410

a.   The dollar cut-off is the minimum EAGI needed to fall within the appropriate percentile grouping.

Measurement of Static Effects.   Previous analyses discuss how the distribution of tax payments changed after enactment of ERTA, but generally do not fully specify the static changes from which behavioral responses are measured.   In some analyses, ERTA is represented as an across-the-board proportional tax cut, with a slightly higher reduction in the maximum marginal tax rate.   This representation does not take account of other important details of tax law, such as the changes in the IRA deduction and the second earner deduction and the existence of the maximum tax rate on earned income prior to 1982.   It also ignores the effects of bracket creep due to nominal income growth on the distribution of the tax burden.   In contrast, this study constructs a static baseline that includes all of these elements.

Detailed Examination of Components of Change.   Previous analyses compare aggregate changes in taxes paid by different income groups, but do not look closely at how different components of the tax base changed.[12]   This study looks closely at separate components of the tax base, such as changes in capital gains, wages and salaries, and dividends, and changes in the use of different itemized deductions.   These changes are compared with changes in marginal tax rates by income group, in order to make some judgment about what changes

12.   An exception is Vedder and Gallaway, "The Changing Burden," who report an increase in "entrepreneurial income" in the top groups.   In contrast, the very detailed study by Lindsey does not examine how different components of income were affected by changes in the tax law.   See Lindsey, "Taxpayer Behavior."

in the tax base can reasonably be attributed to the different behavioral effects in different income groups.

Choice of Base Year.   This study uses 1980 as the base year because it is the last full year not affected by any of the changes in ERTA.   Some of the other studies used 1979 or 1981 as base years.

Even with the improved methods used here, major uncertainties about the baseline and data interpretation remain.   As noted above, the most important uncertainty is the level of aggregate economic growth that would have occurred if tax policy had not changed.   The problem of interpreting the meaning of changes in the income distribution if people are switching between income groups over time also remains.   As in the case of other studies, the results of this study should be interpreted with some caution.

ORGANIZATION OF THE STUDY

Chapter II compares actual taxes paid by income group in 1980 and 1983.   A method for disaggregating changes in tax payments into major components is outlined and the contributions of different items to changes in the distribution of tax payments are shown.   The chapter also reports changes by income group in the distribution of after-tax EAGI and in the real level of after-tax income.

Chapter III examines the static effects of ERTA on the distribution of individual tax payments.   The chapter estimates how taxes paid in 1983, on 1983 incomes, would have differed if 1980 law, indexed for the overall growth of per capita income between 1980 and 1983, had been in effect.   It shows the separate effects on the distribution of tax payments of bracket creep, statutory tax rate changes, and legislated changes in the individual tax base.

Chapter IV combines the Chapter II and Chapter III findings, along with data on changes in marginal tax rates by income group, to assess the extent to which behavioral responses to lower tax rates may have resulted in positive revenue feedbacks and in changes in the distribution of tax payments.   First, changes in taxes paid by income groups are estimated, compared to a baseline in which incomes grow, but the income distribution and tax rates remain fixed.   Then, the change in taxes paid is partitioned into "static" and "behavioral and other" effects.   The final sections of Chapter IV examine the possible behavioral responses that are identified in more detail.   Particular attention is paid to increases in both the realization of capital gains and in total wage and salary income for taxpayers in the top 1 percent of the income distribution.

CHAPTER II

ACTUAL CHANGES IN THE DISTRIBUTION OF TAXES

AND INCOME, 1980-1983

This chapter compares data from 1980 and 1983 to see how the distribution of income and tax payments actually changed over that time period, both because of tax policy changes and as a result of all other factors--such as changes in the distribution of pretax income and changes in the use of tax benefits available in both years. Chapters that follow provide estimates of how much of the change in the distribution of tax payments could be attributed to direct or static effects of tax law changes, how much to the overall growth in nominal income, and how much to changes in the distribution of income, the use of deductions, and realizations of capital gains.

The data in this chapter indicate that both the top percentile of returns and the bottom half of returns paid a greater share of total income taxes in 1983 than in 1980, but that other groups paid somewhat smaller shares. While all income groups paid more taxes in 1983 than in 1980, tax payments increased relatively more for the top and bottom income groups, especially for the top percentile of returns. Taxes paid by the top percentile of returns increased proportionately more than taxes paid by other groups because the top group experienced a much larger growth in before-tax expanded adjusted gross income (EAGI). Most of the higher growth rate of EAGI in the top percentile can be explained by the growth of capital gains income.

Although the share of tax payments of the top percentile increased, overall statistical measures show a slight decline in the progressivity of the tax system between 1980 and 1983. This occurred because, except for the top percentile, tax payments generally increased at a greater rate for lower income groups than for higher income groups. Because of shifts in the distribution of pretax income toward the top income groups, there was greater inequality in the distribution of after-tax income in 1983 than in 1980. In particular, even though the share of tax payments of the top percentile increased between 1980 and 1983, this group received a higher share of after-tax income. Over the 1980-1983 period, the lower income groups became worse off in absolute, as well as

relative, terms.   On average, the top half of returns received more real after-tax income per capita in 1983 than in 1980, while the bottom half of returns received less real after-tax income per capita.

The next section of this chapter reports data on changes in the distribution of income tax payments by EAGI percentile group between 1980 and 1983, and shows the relative contribution of changes in tax rates and income levels to this change in tax payments.   There follows a more detailed discussion of the relative changes in different components of income.   These data suggest what types of behavioral responses may have contributed to the higher tax share paid by the top percentile of returns.   (Potential behavioral responses are examined in more detail in Chapter IV.)   The final sections of this chapter examine in more detail changes in the distribution of taxes paid and EAGI between 1980 and 1983, as well as changes in real before-tax and after-tax EAGI per return.

Throughout this chapter, particular attention is paid to the returns in the top percentile of the income distribution.   The top group experienced the largest reduction in marginal tax rates and the largest growth in income over the 1980-1983 period--a growth that many analysts have attributed to behavioral responses to the ERTA tax cuts.

THE DISTRIBUTION OF INCOME TAX PAYMENTS

Table II.1 shows that the share of total income taxes paid by the top percentile of returns increased from 19.1 percent in 1980 to 20.6 percent in 1983. The shift in the distribution of taxes paid was uneven across the other income groups.   Groups 2, 3, and 4, which include other taxpayers in the top half of the income distribution, each paid a lower share of taxes in 1983 than in 1980, while the tax share of the bottom group (Group 5) increased.   Thus, one cannot say generally that higher income groups paid a larger share of taxes in 1983 than in 1980, only that the very top group paid more.

TABLE II.1.   DISTRIBUTION OF INCOME TAXES: 1980-1983
          (In percent)

	Total	Expanded Adjusted Gross Income				
		Group 1 (1%)	Group 2 (2-5%)	Group 3 (6-25%)	Group 4 (26-50%)	Group 5 (51-95%)
1980	100.0	19.1	17.8	36.3	19.9	6.9
1981	100.0	17.4	17.4	37.1	20.3	7.7
1982	100.0	19.2	17.2	36.3	20.1	7.1
1983	100.0	20.6	17.1	35.6	19.6	7.0

Changes in tax shares can also be examined by observing comparative rates of growth of income tax payments among income groups. If the percentage growth in tax payments for any income group is higher or lower than the average for all groups, the share of taxes of that group will correspondingly rise or fall.

The top line of Table II.2 shows the percentage growth in tax payments for each EAGI group. Total individual income taxes paid increased 9.5 percent between 1980 and 1983. Taxes paid by returns in the top percentile increased by 18.5 percent, almost double the average increase. The next largest increase was 10.6 percent for Group 5, the lowest EAGI group.

TABLE II.2. OVERVIEW: PERCENTAGE GROWTH IN INCOME
TAXES: 1980-1983 (In percent)

Percentage Growth In:	Total	Expanded Adjusted Gross Income				
		Group 1 (1%)	Group 2 (2-5%)	Group 3 (6-25%)	Group 4 (26-50%)	Group 5 (51-95%)
Income Taxes	9.5	18.5	5.3	7.6	7.9	10.6
Taxes/EAGI	-10.0	-16.8	-16.2	-13.9	-11.5	-7.9
EAGI	24.5	42.4	25.7	24.9	21.9	20.2
Cross-Product a/	-3.0	-7.1	-4.2	-3.4	-2.5	-1.6

a. Cross-Product = [% Growth in (Taxes/EAGI)]*[% Growth in EAGI)].

Components of Growth in Tax Payments

Total income taxes paid can be calculated by multiplying the tax rate by the level of income. If expanded adjusted gross income (EAGI) is used as the measure of income, then taxes paid can be expressed as:

(2.1)   Taxes = (Taxes/EAGI)*EAGI

where (Taxes/EAGI) is the ratio of taxes to EAGI. This is a measure of the effective tax rate that takes account of both statutory rates and the role of exemptions, deductions, and exclusions in reducing the fraction of total income that is taxed.

The percentage change in taxes between two periods can be expressed as the sum of the percentage changes in tax rates and income. (See Appendix C.)

(2.2) $\% \Delta \text{TAX} = \% \Delta (\text{TAX}/\text{EAGI}) + \% \Delta (\text{EAGI}) +$
       $[\% \Delta(\text{TAX}/\text{EAGI}) * \% \Delta \text{EAGI})]$

where % = percentage change and TAX = income taxes paid.

Table II.2 above shows the percentage changes in taxes paid, in the ratio of taxes to EAGI, and in EAGI for the five EAGI groups between 1980 and 1983. This gives an overall view of what happened over that time interval. The percentage growth rate in EAGI was highest for the top income group-- 42.4 percent, compared to 24.5 percent for all groups--and successively lower for all other income groups. The percentage decrease in the ratio of taxes to EAGI was also the largest for the top income group and successively smaller for other groups. That is, the groups that experienced larger tax rate reductions also experienced a larger growth rate in pretax income. For the top percentile, but not for other groups in the top half of the distribution, this relatively greater growth in income was large enough to increase their tax payments by a larger percentage than the increase for the entire population.

Total taxes paid can be further disaggregated by expressing them as the product of four factors: the ratio of taxes to taxable income (a measure of the average statutory tax rate); the ratio of taxable income to AGI (a measure that declines as personal exemptions and itemized deductions become relatively more important); the ratio of AGI to EAGI (a measure that declines as exclusions and deductions from gross income become relatively more important); and EAGI itself. This identity is expressed in equation (2.3) below:

(2.3) Tax = $(\text{TAX}/\text{TY}) * (\text{TY}/\text{AGI}) * (\text{AGI}/\text{EAGI}) * \text{EAGI}$
      where TY = taxable income

Then, equation (2.4) below shows that we can approximate the percentage growth of tax payments as the sum of the growth rates of the four factors. In this way, we can identify in more detail the major sources of growth in tax payments for each income group. (Note again that the sum of the growth rates of the factors will not precisely equal the total growth in taxes paid because of cross-product terms, as shown above in equation (2.2) and explained in more detail in Appendix C.)

(2.4) $\% \Delta \text{TAX} = \% \Delta (\text{TAX}/\text{TY}) + \% \Delta(\text{TY}/\text{AGI}) + \% \Delta(\text{AGI}/\text{EAGI}) +$
       $\% \Delta \text{EAGI} + \text{Residual}$

where % = percentage change, TAX = taxes paid, TY =
taxable income, and Residual = effect of cross-product terms.

Table II.3 shows the percentage growth of total taxes and of each of the four factors in Equation (2.4). The growth in EAGI significantly outweighed the reduction in the ratio of taxes to taxable income, and a smaller reduction in the ratio of AGI/EAGI, resulting in a growth in taxes paid for all groups and especially for the top percentile. Changes in the ratio of taxable income to AGI, however, had a relatively insignificant effect on changes in total taxes paid over the period.

TABLE II.3.   PERCENTAGE GROWTH OF INCOME TAXES: 1980-1983
              (In percent)

| | Total | Expanded Adjusted Gross Income Group | | | | |
		Group 1 (1%)	Group 2 (2-5%)	Group 3 (6-25%)	Group 4 (26-50%)	Group 5 (51-95%)
Income Taxes	9.5	18.5	5.3	7.6	7.9	10.6
Tax/Taxable Income	-9.3	-9.1	-9.8	-9.8	-10.6	-9.2
Taxable Income/ AGI	0.3	-1.7	-3.0	-1.1	1.0	2.3
AGI/EAGI	-3.3	-6.9	-4.2	-3.4	-1.9	-0.8
EAGI	24.5	42.4	25.7	24.9	21.9	20.2

Note: Component growth does not sum to growth of total income tax payments because of cross-product
        terms. See Appendix C for further explanation.

Growth in EAGI

As shown in Table II.3, the top percentile experienced a much larger growth in EAGI between 1980 and 1983 (42.4 percent) than did taxpayers as a whole (24.5 percent). This relatively large growth in EAGI is the reason the tax share of the highest income group increased.

EAGI can be expressed as the sum of all income items included in AGI plus excluded items of income. The excluded items of income that were "added back" to AGI to derive the measure of EAGI used in this report are excluded dividends and excluded capital gains. Thus, EAGI can be expressed as:

(2.5)   EAGI = wages + interest + dividends + capital gains - capital

losses + net business income + other income

The percentage growth in EAGI can then be expressed (Equation (2.6)) as the sum of the weighted percentage growth rates of the income items that add up to EAGI, with the weights being each income item's share in EAGI. The contribution of each income item to EAGI growth between 1980 and 1983, that is, the weighted growth rate, depends on both the item's growth rate and on the fraction of EAGI that the item represented in 1980.

(2.6) $\% \Delta$ EAGI = $(\% \Delta$ wages * (wages/EAGI)) +

   $(\% \Delta$ interest * (interest/EAGI)) +

   $(\% \Delta$ dividends * (dividends/EAGI)) +

   ..... [1]

Table II.4 shows the growth rates of EAGI and the weighted growth rates of the components of EAGI for all the income groups between 1980 and 1983. Most of the growth of EAGI for the entire taxpaying population came from the growth in wages and salaries. This occurred because wages and salaries represent the largest income items in all groups. The growth in wages and salaries, however, contributed slightly less to EAGI growth in the top group (15.3 percentage points) than for taxpayers as a whole (17.7 percentage points). For the top group, growth in capital gains contributed 22.4 percentage points, or slightly over half of the 42.4 percent growth in EAGI. In contrast, for the entire population, capital gains contributed only 2.9 percentage points to the 24.5 percent overall growth in EAGI. This means that capital gains contributed over 100 percent (19.5 percentage points) of the differential growth in EAGI (17.9 percentage points) between the top income group and the entire population.[2]

Capital gains contributed more to the growth of EAGI in the top group partly because capital gains increased by a greater percentage in the top group than for the entire population, but mainly because capital gains represent a larger fraction of EAGI for the top group. Because 1980 and 1983, capital gains increased by 89.0 percent in the top group, compared to an overall growth

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1.   See Appendix C for a derivation of this equation.

2.   Because 60 percent of long-term capital gains are excluded from AGI, capital gains contributed less to the growth of AGI and of taxable income than it did to the growth of the more comprehensive income measure, EAGI. Still, the growth in capital gains in AGI contributed 10.9 percentage points to the growth in AGI for the top group, compared to a contribution of 1.3 percentage points for the entire population. This 9.6 percentage-point difference accounted for almost 80 percent of the 12.3 percentage-point difference between the growth rate of AGI for the top group and the growth rate of AGI for the entire population.

TABLE II.4.   WEIGHTED GROWTH OF COMPONENTS OF POSITIVE
EAGI: 1980-1983 (In percent)

		Expanded Adjusted Gross Income Group				
	Total	Group 1 (1%)	Group 2 (2-5%)	Group 3 (6-25%)	Group 4 (26-50%)	Group 5 (51-95%)
EAGI a/	24.5	42.4	25.7	24.9	21.9	20.2
Wages and Salaries	17.7	15.3	21.9	20.3	15.0	12.8
Interest	3.1	3.1	1.9	2.3	3.1	5.1
Dividends	0.6	1.3	0.5	0.5	0.6	0.5
Capital Gains	2.9	22.4	2.3	0.5	0.4	0.5
Capital Losses	*	*	*	*	*	0.1
Net Business Income b/	-0.8	-2.4	-1.5	-0.1	0.2	0.4
Other Income c/	1.2	3.0	0.9	1.6	2.7	1.1

* Less than 0.05 percent.

a. Certain expenses, such as above-the-line employee business expenses, are subtracted from income to compute EAGI. As a result, the percentage change in EAGI is not exactly equal to the weighted sum of percentage changes in the income items.

b. Net business income is defined here as unincorporated business profits minus business losses, plus farm profits minus farm losses, plus partnership profits minus partnership losses.

c. Includes state tax refunds, alimony received, taxable pensions and annuities, rents, royalties, farm rental income, taxable unemployment compensation, and miscellaneous other income.

of 65.3 percent. In 1980, capital gains were 25.1 percent of EAGI for the top group, compared to only 4.5 percent for all taxpayers.

Other income items that contributed to the greater relative growth in income for the top group were dividends (1.3 percentage points, compared to the average of 0.6 percentage points) and other income (3.0 percentage points, compared to the average of 1.2 percentage points). On the other hand, a decline in net business income (including net operating income from proprietorships, partnerships, and farms) lowered EAGI growth by 2.4 percentage points for the top group, compared to 0.8 percentage points for the entire population. The decline in net business income may reflect individual taxpayers' use of accelerated

depreciation provisions enacted in the 1981 act rather than any actual decline in the profitability of unincorporated business enterprises.

The data in Table II.4 suggest that one behavioral response that might have contributed to the growth of tax payments by the top group was an "unlocking" of capital gains in response to the lowering of the top rate on capital gains from 28 percent to 20 percent. This possibility is explored further in Chapter IV.

As shown in Table II.3, changes in the ratio of AGI to EAGI, taxable income to AGI, and taxes paid to taxable income were much less important determinants of the shifts in the distribution of taxes paid. These changes are detailed in Appendix D.

CHANGES IN MEASURES OF THE DISTRIBUTION OF THE TAX BURDEN

The changes in the distribution of pretax income and taxes paid between 1980 and 1983 affected overall measures of the progressivity of the tax system. This section examines changes in standard measures of progressivity to determine whether the individual income tax system became more or less equalizing over this period.

If all changes in the pretax distribution of income between 1980 and 1983 were caused by changes in taxes, then the best measure of whether or not the tax changes were equalizing is the change in the distribution of after-tax income. This is because those experiencing a higher proportional growth in after-tax income are the ones made relatively better off by the tax change. [3] If, however, the distribution of pretax income changed for reasons other than tax changes, then the change in the after-tax distribution of income could be a very poor measure of the distributional effect of the tax change because it would reflect changes unrelated to tax policy. For this reason, the paper presents data on two separate measures of changes in the distribution of the tax burden--the change in the distribution of after-tax income by income group and the change in the distribution of taxes paid by income group.

Table II.5 shows the distribution of taxes paid, before-tax EAGI, and after-tax EAGI among the five income groups between 1980 and 1983. The table shows, as noted above, that the share of taxes paid by the top percentile increased from 19.1 percent in 1980 to 20.6 percent in 1983, the share paid by the bottom half of returns increased slightly from 6.9 percent to 7.0 percent, and the share paid by all other groups decreased. It also shows that shares

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3.   For example, if the tax change caused a growth in the pretax income of a particular group, the group could be better off even if it paid more taxes.

of both pretax and after-tax EAGI increased for higher-income groups, especially the top 1 percent, and declined for lower-income groups. Thus, even though the top percentile paid a somewhat higher percentage of taxes (as did the bottom half) in 1983 than in 1980, the distribution of after-tax income became less equal over that period.

TABLE II.5.   DISTRIBUTION OF TAXES PAID, BEFORE-TAX EAGI
               AND AFTER-TAX EAGI (In percent)

		Expanded Adjusted Gross Income Group				
	Total	Group 1 (1%)	Group 2 (2-5%)	Group 3 (6-25%)	Group 4 (26-50%)	Group 5 (51-95%)
Share of Taxes						
1980	100	19.1	17.8	36.3	19.9	6.9
1981	100	17.4	17.4	37.1	20.3	7.7
1982	100	19.2	17.2	36.3	20.1	7.1
1983	100	20.6	17.1	35.6	19.6	7.0
Share of Before-Tax EAGI						
1980	100	9.6	12.8	35.4	25.2	16.9
1981	100	9.9	13.1	35.1	24.8	16.8
1982	100	10.3	12.6	35.3	24.9	16.7
1983	100	10.9	12.8	35.3	24.6	16.2
Share of After-Tax EAGI						
1980	100	7.9	11.9	35.2	26.1	18.7
1981	100	8.7	12.4	34.8	25.6	18.3
1982	100	8.9	11.9	35.1	25.7	18.2
1983	100	9.4	12.2	35.3	25.3	17.6

Table II.6 presents summary measures of the distributional inequality of income and tax payments and of the progressivity of the tax system. The measure used to evaluate the distribution of EAGI and after-tax EAGI is the Gini coefficient. The Gini coefficient measures the degree of income concentration. A higher value of the Gini coefficient indicates that the distribution of EAGI is less equal; the coefficient would equal 0 if all returns had the same EAGI and 1 if all the EAGI were on one tax return. [4] The Gini coefficient is reported in Table II.6 for both pretax and after-tax EAGI. It is lower for after-tax EAGI because the progressive income tax reduces to some degree the inequality of the income distribution.

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4.   For a further explanation of the Gini coefficient, see Appendix E.

TABLE II.6.   SUMMARY MEASURES OF INEQUALITY OF INCOME
               DISTRIBUTION AND TAX PROGRESSIVITY

	1980	1981	1982	1983
	Gini Coefficient			
PreTax EAGI a/	0.4940	0.4999	0.5063	0.5156
After-Tax EAGI a/	0.4644	0.4755	0.4813	0.4929
	Tax Progressivity			
Suits Index b/	0.2368	0.2026	0.2159	0.2188
PreTax Minus				
After-Tax Gini				
Coefficients c/	0.0296	0.0244	0.0250	0.0277

a.   A higher number indicates greater inequality.
b.   See text and footnotes. A smaller number indicates less progressivity.
c.   A smaller number shows less effect of the tax system in reducing inequality.

Table II.6 shows that the Gini coefficient for after-tax EAGI increased from
0.4644 to 0.4929, indicating that the distribution of after-tax income was more
unequal in 1983 than in 1980. One factor causing this change was an increase
in the Gini coefficient for pretax EAGI from 0.4940 in 1980 to 0.5156 in 1983.
The other was changes in the distribution of tax payments.

Table II.6 also presents two measures of the degree of progressivity of the
tax system.   One measure--the Suits index--is an aggregate measure of the
relationship between shares of the tax burden and share of pretax income. [5]
This index measures the degrees to which taxpayers with a given share of pretax
income pay the same share of the tax burden. The index increases as the tax
system becomes more progressive--a value of 0 indicates that taxes paid are
proportional to income (no progression in the tax structure), while a value of
1 would result if the taxpayer with the highest income paid all the taxes. A

5.   For a discussion of the Suits index, see Daniel B. Suits, "Measurement of Tax Progressivity,"
     American Economic Review, vol. 67, no. 4 (September 1977), pp. 747-752. For a discussion
     of that measure and alternatives, see Appendix E.

second measure is the difference between the Gini coefficients of pretax and
after-tax EAGI. This is one way to measure the extent to which the tax sys-
tem affects the inequality of the after-tax distribution of income.[6]

Table II.6 shows that, as measured by the Suits index, the tax system was
slightly less progressive in 1983 than in 1980, although tax progressivity increased
between 1981 and 1983, the years in which the biggest portion of the tax reduc-
tions took effect. As measured by the difference between the Gini coefficients
of pretax and after-tax EAGI, progressivity also appears to have declined. The
difference between the two Gini coefficients declined from 0.0296 to 0.0227, in-
dicating a significantly lessened role of taxes in reducing inequality.

The results from these two measures of tax progressivity do not necessari-
ly contradict the observation that the top percentile paid a higher share of taxes
in 1983. First, they are summary measures of progressivity over the entire in-
come distribution. Second, regarding just the difference between pretax and
post-tax Gini coefficients, with lower overall tax rates a graduated tax system
may have a smaller impact on the distribution of income even if a higher
proportion of the taxes collected are paid by the upper-income groups.

CHANGES IN REAL INCOME BETWEEN 1980 AND 1983

The previous sections of this chapter have shown changes in relative tax pay-
ments, relative income shares, and summary distributional measures. In par-
ticular, Tables II.5 and II.6 show that the distribution of after-tax income became
less equal between 1980 and 1983. Even if the income distribution became less
equal, however, it is possible that lower-income groups could have gained in ab-
solute terms if growth rates were higher enough to offset the decline in their
income shares.

Table II.7 shows changes in real EAGI per return between 1980 and 1983
for the five income groups. Real EAGI per return is calculated by dividing
total EAGI in each income group by the number of returns, and then adjust-
ing the income measure for changes in the implicit price deflator for GNP be-
tween the base year and 1983. The results are all expressed in 1983 dollars.

Table II.7 shows that, on average, higher EAGI groups experienced increases
in real EAGI between 1980 and 1983, while lower EAGI groups experienced

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6.   One problem with this measure is that the tax system itself may alter the distribution of
     pretax income. For example, if high tax rates discourage the realization of capital gains by
     high-income taxpayers, then lower capital gains tax rates increase both pretax income and taxes
     paid by upper-income taxpayers. The distributional effect of the tax change is then its effect
     on the distribution of after-tax income, not its effect on the difference between pretax and
     after-tax income.

decreases. Overall, real EAGI per return (in 1983 dollars) increased from $21,596 in 1980 to $21,745 in 1983--a rise of just under 1 percent in three years. Real EAGI per return increased in 1981, declined sharply in 1982, and then recovered slightly in 1983. These year-to-year movements in real income reflect the effects of the 1980 and 1981-1982 recessions. Over the three-year period, real EAGI per return increased for groups in the top quartile of the distribution; for the top percentile it increased from $206,850 in 1980 to $237,105 in 1983--an increase of 15 percent. For income group 5, however, real EAGI per return declined from $8,111 in 1980 to $7,845 in 1983.

TABLE II.7.   REAL EXPANDED ADJUSTED GROSS INCOME
              PER RETURN (In 1983 dollars)

	Total	Expanded Adjusted Gross Income Group				
		Group 1 (1%)	Group 2 (2-5%)	Group 3 (6-25%)	Group 4 (26-50%)	Group 5 (51-95%)
Real EAGI Per Return						
1980	21,596	206,850	68,819	38,208	21,767	8,111
1981	22,937	227,956	75,187	40,274	22,768	8,573
1982	21,357	220,713	67,507	37,697	21,248	7,908
1983	21,745	237,105	69,707	38,395	21,362	7,845
Real After-Tax EAGI Income Per Return						
1980	18,367	145,261	54,455	32,349	19,198	7,614
1981	19,648	170,619	60,879	34,173	20,099	8,007
1982	18,335	162,835	54,478	32,212	18,816	7,428
1983	18,899	178,364	57,519	33,324	19,132	7,403

NOTE: Deflated by implicit GNP price deflator.

Because of the tax reductions, real after-tax EAGI per return increased by more than real EAGI per return--an increase of about 3 percent from $18,367 in 1980 to $18,899 in 1983. The largest increase went to the top percentile of returns--an increase of 23 percent from $145,261 in 1980 to $178,364 in 1983. (This increase reflects in part increased realizations of capital gains, which can occur at the discretion of the taxpayer even when income and wealth do not increase, but also reflects increases in accrued gains because of the strong stock market and increases in other components of income.) On the other hand, for the lowest group in the income distribution, real after-tax EAGI per return declined from $7,614 to $7,403--a decline of almost 3 percent.

The extent to which changes in tax policy contributed to the shift in the distribution of income and the declines in real income per return in the lowest

income group cannot be determined from these calculations. Many other economic variables may have affected the growth and distribution of income, including factors that contributed to the 1981-1982 recession. Moreover, a three-year period is not a fair test of whether tax cuts for upper-income groups help the bottom half of the population because many of the most important incentive effects of lower tax rates can be expected to improve productivity and economic growth only over an extended time period. Nonetheless, the data do show that the higher share of taxes paid by the top income group following the enactment of ERTA are also associated with lower real after-tax incomes for the bottom half of the taxpaying population over the 1980-1983 period. What might appear to be a progressive shift in the tax burden is in fact just the reverse.

CONCLUSIONS

This chapter has examined actual changes in taxes paid, income, and components of income for different income groups between 1980 and 1983. This does not lead to conclusive findings about the effects of the tax policy changes in ERTA and TEFRA, but does at least clarify what happened during the period just following their enactment.

Between 1980 and 1983, both the share of taxes paid and the share of after-tax income received increased for taxpayers in the top percentile of the income distribution. The increase in the share of taxes paid by the top income group resulted largely from increases in their pretax income, not reduced use of exemptions and deductions reported on tax returns. Virtually all of the increase in pretax income of the top percentile can be attributed to increases in the realization of capital gains.

The bottom half of the population also paid a higher share of taxes in 1983 than in 1980, while tax shares of groups in the top half, but below the top percentile, declined. As shown in more detail in Chapter III, the growth in the tax share paid by the bottom group reflects a greater decline as a share of income in the value of the zero bracket amount and personal exemptions for the bottom group than for other groups. The distribution of both pretax and after-tax income became less equal between 1980 and 1983, and real after-tax EAGI per return actually declined for returns in the bottom half of the distribution.

The last two chapters of this report subdivide changes in total taxes paid into three components: (1) those due to changes in the tax law applied to fixed income levels, (2) those due to overall growth in incomes, and (3) those due to shifts in the distribution and composition of income. Chapter III examines direct effects of changes in the tax law in some detail. Chapter IV then considers the extent to which induced behavioral effects may have affected the distribution of tax payments.

CHAPTER III

STATIC EFFECTS OF THE TAX CUTS IN ERTA

This chapter presents estimates of the static effects of the tax cuts enacted as part of the Economic Recovery Tax Act of 1981 (ERTA) and modified by the Tax Equity and Fiscal Responsibility Act of 1982 (TEFRA) on the distribution of individual income tax payments. These effects are measured at a constant 1983 level and distribution of income. Possible changes in the distribution of income in response to the tax cut are discussed in Chapter IV.

To isolate the effects of changes in the tax law alone, the static estimates are based only on tax return data for 1983.[1] The estimates are derived by comparing the actual distribution of the tax burden in 1983 with simulations of the distribution of taxes that would have been paid by the same taxpayers under variants of 1980 law.[2]

A simulated distribution of 1983 tax liabilities was computed using a version of 1980 law in which 1980 bracket boundaries, personal exemptions, and other fixed dollar amounts in the law had been indexed for the average growth in per capita personal income between 1980 and 1983. This was equivalent to indexing the 1980 tax structure for both inflation and real income growth. This indexed version of 1980 law maintained the same average tax burden in 1983 as in 1980, and kept the share of taxes paid by income groups constant at the 1980 distribution. The distribution of tax liabilities under this law was compared to (1) the distribution of tax liabilities that would have existed in 1983 using 1980 tax rates, tax brackets, and the 1980 definition of the tax base, (2) the distribution that would have existed in 1983 using 1983 tax rates and brackets but the 1980 definition of the tax base, and (3) the actual 1983 distribution using 1983 law.

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1.   Internal Revenue Service, Statistics of Income Division, *Individual Income Tax Returns 1983* (Washington, D.C.: Internal Revenue Service, November 1985).

2.   The base year for this analysis is 1980 because it is the most recent year unaffected by the changes in the 1981 Act. Though passed in 1981, tax changes in ERTA affected 1981 tax liabilities with a 1.25 percent reduction in marginal tax rates, a reduction in the capital gains rate to 20 percent for gains realized after June 9, 1981, and an acceleration of depreciation deductions for investments placed in service after January 1, 1981.

The results of the simulations indicate:

■ Because the tax law was not indexed between 1980 and 1983, nominal income growth shifted the distribution of taxes paid to the disadvantage of taxpayers in the lower half of the income distribution. Nominal income growth increased tax liabilities more than proportionally to income because tax bracket boundaries, the zero bracket amount, and personal exemptions all were fixed in nominal terms. [3] This phenomenon, commonly known as bracket creep, by itself substantially increased the share of taxes paid by taxpayers in the bottom half of the income distribution, and significantly reduced the share of taxes paid by taxpayers in the upper 1 percent of the distribution;

■ Compared to the distribution of taxes that would have been paid in 1983 if actual 1980 law had remained in place, the rate cuts, while lowering overall taxes, did little to change the distribution of the tax burden;

■ The change in the definition of the tax base between 1980 and 1983 slightly reduced the share of taxes paid by taxpayers in the upper 25 percent of the income distribution, except for taxpayers in the highest 1 percent. For these latter taxpayers, as well as for taxpayers in the remaining three-quarters of the income distribution, the changes in the definition of the tax base slightly increased the share of taxes paid;

■ Because the rate cuts were roughly proportional and the effects of changes in the definition of the tax base were relatively small and mostly concentrated in the upper quarter of the income distribution, the changes in tax law enacted by ERTA and TEFRA did little to offset the shift in the distribution of tax liabilities resulting from the growth in nominal incomes. Thus, compared to the share of taxes paid under 1980 law, the share of taxes under 1983 law was slightly lower for taxpayers in the upper 25 percent of the income distribution, slightly higher for taxpayers in the next 25 percent, and substantially higher for taxpayers in the bottom half of the income distribution.

The next section explains in more detail the tax changes that were simulated in developing the static estimates. The section after that presents the simulation results.

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3.   As a results of changes enacted by ERTA, beginning in 1985 these dollar amounts were indexed to keep pace with increases in the level of consumer prices. However, with a tax system indexed for inflation, rising real incomes will still cause a more-than-proportional increase in taxes.

INDIVIDUAL INCOME TAX CHANGES IN ERTA AND TEFRA

ERTA and TEFRA significantly changed many of the provisions of the individual income tax code. The provisions described below are a small subset of the total ERTA and TEFRA changes. Other individual income tax provisions of ERTA and TEFRA, however, affected such a small number of returns and by such small amounts that they did not alter significantly the distribution of taxes paid. The changes described here are only those that occurred between 1980 and 1983.

Individual Income Tax Rate Reductions

ERTA reduced tax rates across most taxable income brackets by approximately 23 percent. This reduction was phased in over a three-year period between 1981 and 1984. In 1981 all taxpayers received a 1.25 percent credit against regular tax liability before credits, equivalent to a 5 percent cut in marginal rates for the last three months of the year. In 1982, marginal rates were about 10 percent lower than they would have been under pre-ERTA law. In 1983, they were about 19 percent lower than under pre-ERTA law. ERTA also reduced the highest marginal tax rate from 70 percent to 50 percent, effective for tax year 1982 and after.

Table III.1 shows the percentage reduction in tax rate by taxable income bracket between 1980 and 1983 for joint returns. Not all taxpayers received exactly a 19 percent reduction in their marginal rate. Some of the difference between the actual percentage change and the 19 percent is due to the rounding of rates to the nearest whole percentage. In the higher taxable income brackets, the percentage changes are well above 20 percent because of the drop in the top rate. However, not all taxpayers in the highest brackets received a marginal tax rate reduction as great as shown in Table III.1. Under prior law, a maximum tax on personal service income limited the top statutory rate on certain types of income to 50 percent.[4] (The rules for computing the maximum tax were such that many taxpayers with both personal service and other income faced actual marginal rates on personal service income somewhat higher than 50 percent.)[5] Taxpayers who had paid the maximum tax under pre-ERTA law did not receive reductions quite as large as shown in Table III.1, because a portion of their income was already taxed at marginal rates closer to 50 percent than to the top rate of 70 percent.

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4. Personal service income included wages, salaries, tips, professional fees, taxable pensions, and a portion of income from corporations or businesses attributable to labor income.

5. See Emil M. Sunley, Jr., "The Maximum Tax on Earned Income," *National Tax Journal*, vol. 26 (December 1974), pp. 543-552 and Lawrence B. Lindsey, "Is the Maximum Tax on Earned Income Effective?", *National Tax Journal*, vol. 34 (June 1981), pp. 249-256.

TABLE III.1. PERCENT CHANGES IN STATUTORY MARGINAL TAX
            RATES; JOINT RETURNS: 1980-1983

Taxable Income Bracket	1980 Marginal Tax Rate	1983 Marginal Tax Rate	Percent Change In Marginal Tax Rate
$ 0 to 3,400	0	0	—
3,400 to 5,500	14	11	-21.4
5,500 to 7,600	16	13	-18.8
7,600 to 11,900	18	15	-16.7
11,900 to 16,000	21	17	-19.0
16,000 to 20,200	24	19	-20.8
20,200 to 24,600	28	23	-17.9
24,600 to 29,900	32	26	-18.8
29,900 to 35,200	37	30	-18.9
35,200 to 45,800	43	35	-18.6
45,800 to 60,000	49	40	-18.4
60,000 to 85,600	54	44	-18.5
85,600 to 109,400	59	48	-18.6
109,400 to 162,400	64	50	-21.9
162,400 to 215,400	68	50	-26.5
215,400 and over	70	50	-28.6

The reduction in tax liability depends on both the reduction in the taxpayer's marginal tax rate and on the reduction in taxes on income taxed in lower brackets. Table III.2 shows the reduction in tax liabilities between 1980 law and 1983 law rates at selected levels of taxable income. Again, 1980 taxes at the highest income levels may have been lower than shown in the table to the extent taxpayers received the benefits of the maximum tax on certain types of income.

Changes in the Tax Base

ERTA and TEFRA changed the tax base as well as the rate structure. Changes in the tax base include the following:

■ ERTA expanded eligibility and deduction limits on Individual Retirement Accounts (IRAs). Under prior law, the IRA deduction was not available to individuals who participated in a qualified employer pension, stock bonus, or other retirement plan. The deduction per employee was limited to 15 percent of annual compensation up to $1,500 (plus $250 for a nonworking spouse). For 1982 and after, ERTA increased the limits to $2,000 per employee (plus $250 for a nonworking spouse) or 100 percent of compensation, and, more important, extended eligibility to participants in employer plans. In 1980, 2.6 million returns claimed $3.4 billion in

IRA deductions. By 1983, 13.6 million returns reported $32.1 billion in IRA deductions.

■ ERTA created a deduction for married couples when both spouses work. The deduction was 5 percent of the qualified earned income, up to $30,000, of the spouse with lower earnings in 1982; and 10 percent of earned income, up to $30,000, for 1983 and subsequent years.

■ ERTA created a lifetime exclusion of up to $1,000 ($2,000 for a joint return) worth of interest on qualified savings certificates ("All Savers Certificates") purchased after September 30, 1981, and before January 1, 1983.

■ In 1982 and 1983, ERTA allowed nonitemizers to deduct 25 percent of the first $100 of charitable contributions. Under pre-ERTA law, charitable contributions were deductible only for those who itemized deductions.

■ TEFRA increased the taxation of unemployment compensation benefits for 1982 and later years. Prior to TEFRA, a taxpayer calculated the maximum amount of unemployment compensation to be included in taxable income by taking half of the excess of a sum of income items over a base amount. TEFRA reduced these base amounts from $25,000 for a joint return ($20,000 for single and head-of-household returns) to $18,000 ($12,000).

TABLE III.2. PERCENT CHANGES IN TAX LIABILITY; SELECTED
            TAXABLE INCOME LEVELS; JOINT RETURNS: 1980-1983

Taxable Income	1980 Law Taxes	1983 Law Taxes	Percent Change in Tax Liability
5,000	228	179	-21.5
10,000	1,067	868	-18.7
15,000	2,060	1,680	-18.4
20,000	3,231	2,611	-19.3
25,000	4,641	3,767	-18.8
30,000	6,247	5,072	-18.8
40,000	10,226	8,313	-18.8
50,000	14,778	12,014	-18.7
75,000	27,778	22,614	-18.6
100,000	41,998	34,190	-18.6
200,000	107,032	84,002	-21.5
500,000	316,724	234,002	-26.1
1,000,000	666,724	484,002	-27.4

STATIC DISTRIBUTIONAL EFFECTS

The following tables present estimates of the static distributional effects of the ERTA and TEFRA tax changes. Estimates of tax liabilities in the tables have been calculated at a constant 1983 level and distribution of income.[6]

Tax liabilities and the percentage change in liabilities are shown in the tables for five income groups: the upper 1 percent, the 2nd through 5th percentile, the 6th through 25th percentile, the 26th through 50th percentile, and the 51st through 95th percentile. Income is defined as expanded adjusted gross income, which is adjusted gross income as reported on individual tax returns plus excluded capital gains and dividends, tax-exempt interest from All-Savers Certificates, deductions for IRA and Keogh contributions, and the deduction for two-earner married couples. Tax liabilities are individual income tax liabilities after tax credits and additional taxes for tax preferences, but excluding the refundable portion of the earned income credit.

Table III.3 compares simulated 1983 tax liabilities under indexed 1980 law with simulated tax liabilities under unindexed 1980 law, simulated liabilities under unindexed 1980 law but with the ERTA changes in the tax rates, and liabilities under 1983 law.

Rows (1) and (2) of the table show simulated tax liabilities in 1983 under indexed 1980 law and simulated tax liabilities in 1983 under unindexed 1980 law. The percentage difference in simulated liabilities, which is a measure of the effect of bracket creep over the three-year period, is shown in row (5). While bracket creep would have caused taxes to rise by an average of 14 percent, tax liabilities would have been only 5 percent higher for taxpayers in the upper 1 percent of the income distribution but close to 30 percent higher for taxpayers in the bottom half of the distribution. Most taxpayers in the highest income group already were in the highest income tax bracket and thus would not have suffered significantly from the effects of bracket creep, although these taxpayers would have had a smaller fraction of their incomes taxed at lower rates. Moreover, because the amount of income that can be deducted for each personal exemption is such a small percent of total income for high-income taxpayers, indexing the personal exemption amount would have done little to reduce tax liabilities for this group. For taxpayers in the bottom half of the income distribution both the indexing of brackets and the indexing of personal exemptions would have reduced tax liabilities substantially.

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6.   Tax liabilities were simulated with the CBO individual income tax simulation model using data from the 1983 Individual Income Tax Model File.

TABLE III.3.   STATIC ESTIMATES:
                TAX LIABILITIES IN 1983 SIMULATED UNDER 1980
                AND 1983 LAW (In billions of dollars)

| | | Expanded Adjusted Gross Income Group | | | | |
	Total	Group 1 (1%)	Group 2 (2-5%)	Group 3 (6-25%)	Group 4 (26-50%)	Group 5 (51-95%)
(1) Indexed 1980 Tax Law	311.1	66.6	54.8	112.4	58.7	18.6
(2) Unindexed 1980 Tax Law	353.6	69.7	62.0	192.3	68.3	24.2
(3) Unindexed 1980 Tax Law with Rate Cuts	287.0	57.4	50.6	104.6	55.1	19.4
(4) Rate Cuts and Tax Base Changes (1983 Law)	273.1	56.4	46.7	97.4	53.5	19.1
(5) Percent Change from Bracket Creep [(2)/(1)]	+14	+5	+13	+15	+16	+30
(6) Percent Change from Rate Cuts [(3)/(2)]	-19	-18	-18	-19	-19	-20
(7) Percent Change from Tax Base Changes [(4)/(3)]	-5	-2	-8	-7	-3	-2
(8) Total Percent Change a/ [(4)/(1)]	-12	-15	-15	-13	-9	+3

a. Effect of compounding previous three rows.

Rows (3) and (4) of Table III.3 show simulated tax liabilities under unindexed 1980 law, first with just the changes in tax rates and then with the combined changes in tax rates and the definition of the tax base. Compared to tax liabilities under unindexed 1980 law, the rate cuts alone reduced liabilities by 19 percent as shown in row (6); given these rate cuts, the changes in the definition of the tax base reduced liabilities by an additional 5 percent as shown in row (7). The percentage decrease in liabilities because of the rate cuts was nearly constant across income groups, with taxpayers in the highest income group

receiving a slightly lower reduction of 18 percent and taxpayers in the bottom half of the distribution receiving a slightly higher reduction of 20 percent. The percentage reduction in tax liabilities due to changes in the definition of the tax base, while only averaging about 5 percent, was less evenly distributed. Except for taxpayers in the upper 1 percent of the distribution, taxpayers in the top 25 percent of the income distribution received a 7 to 8 percent reduction, while the remaining three-quarters of taxpayers received a reduction of 2 to 3 percent.

The unequal distribution of reduced tax liabilities from the changes in the tax base reflects the unequal distribution of deductions for IRA contributions and two-earner married couples, the two major changes in the tax base. Table III.4 shows the distribution of these deductions in 1983 by income group. Seventy-six percent of both the deductions for IRAs and the deduction for two-earner couples were taken by taxpayers in the upper 25 percent of the income distribution. The importance of these deductions relative to taxable income, however, varied greatly within the top quartile. IRA and second-earner deductions were about 4 percent of taxable income for the top quartile as a whole, but less than 2 percent of taxable income for the top 1 percent.

TABLE III.4.   1983 DEDUCTIONS FOR CONTRIBUTIONS TO IRAs AND FOR TWO-EARNER MARRIED COUPLES

| | | Expanded Adjusted Gross Income Group | | | | |
	Total	Group 1 (1%)	Group 2 (2-5%)	Group 3 (6-25%)	Group 4 (26-50%)	Group 5 (51-95%)
IRA Deductions						
Billions of dollars	32.1	1.9	7.2	15.2	6.0	1.7
Percent of total	100	6	23	47	19	5
Two-Earner Deductions						
Billions of dollars	19.8	0.4	3.4	11.3	3.9	0.7
Percent of total	100	2	17	57	20	4
IRA Plus Two-Earner Deductions						
Billions of dollars	51.8	2.3	10.7	26.5	9.9	2.4
Percent of total	100	4	21	51	19	5
Taxable Income (Billions of Dollars)	1,544.9	142.3	192.8	562.5	404.2	242.5
IRA plus Two-Earner Deductions as a Percent of Taxable Income	3.4	1.6	5.5	4.7	2.4	1.0

Row (4) of Table III.3 shows simulated tax liabilities under actual 1983 law, while row (8) shows the percent difference between these taxes and taxes simulated under indexed 1980 law. The percentage reduction in tax liabilities from all changes reflects not only the rate cuts and the redefinition of the tax base but also the erosion in the real value of the tax brackets, ZBA, personal exemptions, and the earned income credit--all nonbehavioral changes. Neither ERTA nor TEFRA increased the personal exemption amount or the maximum amount of the earned income credit. Thus, compared to their relative position in 1980, taxpayers in the lower half of the distribution actually had tax liabilities that were 3 percent higher in 1983 in spite of the reduction in tax rates and the additional reduction in tax liabilities due to changes in the definition of the tax base. While the average reduction in tax liabilities from all changes was about 12 percent, the largest reductions went to taxpayers in the upper 5 percent of the income distribution whose tax liabilities were reduced by 15 percent.

Table III.5 illustrates the effects of the ERTA and TEFRA tax changes in a slightly different fashion, showing shares of the total tax burden paid by various income groups. The table shows the share of the tax burden paid by different income groups in 1983 compared to the shares they would have paid under an indexed version of 1980 law at the 1983 level and distribution of income. Overall, there were only small changes in the shares paid by income groups in the upper half of the income distribution. As shown in row (8), the share of the upper 5 percent declined by about 3 percent while the share paid by the remaining taxpayers in the upper 25 percent declined by about 1 percent. The share of the next highest quartile increased by about 4 percent. However, compared to their relative position in 1980, the share of taxes paid by taxpayers in the bottom half of the income distribution increased by almost 17 percent.

Most of the change in the distribution of tax liabilities occurred because of the differential effects of bracket creep. The percentage change in shares from bracket creep is shown in row (5) of the table. Bracket creep would have reduced the share of taxes paid by taxpayers in the upper 1 percent of the distribution by nearly 8 percent while increasing the share of taxes paid by taxpayers in the bottom half of the distribution by almost 15 percent.

Rows (2) and (3) of Table III.5 show the shares of tax liabilities under unindexed 1980 law and unindexed 1980 law with the rate cuts. Given the almost constant percentage reduction in tax liabilities by income class because of the rate cuts, there is little change in the distribution of tax shares. Row (4) shows the shares resulting from both the rate cuts and the changes in the definition of the income tax base. The disproportionate reduction from the base changes going to taxpayers in the 2nd through 25th percentiles of the income distribution is reflected in a slightly reduced share for those groups, and a slightly increased share for the remaining income groups.

TABLE III.5.   SHARE OF TAX LIABILITIES IN 1983: SIMULATED UNDER
               1980 AND 1983 LAW (In percent of total liabilities)

		Expanded Adjusted Gross Income Group				
	Total	Group 1 (1%)	Group 2 (2-5%)	Group 3 (6-25%)	Group 4 (26-50%)	Group 5 (51-95%)
(1) Indexed 1980 Tax Law	100.0	21.4	17.6	36.1	18.9	6.0
(2) Unindexed 1980 Tax Law	100.0	19.7	17.5	36.6	19.3	6.9
(3) Unindexed 1980 Tax Law with Rate Cuts	100.0	20.0	17.6	36.4	19.2	6.8
(4) Rate Cuts and Tax Base Changes (1983 Tax Law)	100.0	20.7	17.1	35.7	19.6	7.0
(5) Percent Change in Shares from Bracket Creep [(2)/(1)]	—	-7.9	-0.5	+1.2	+2.5	+14.7
(6) Percent Change in Shares from Rate Cuts Only [(3)/(2)]	—	+1.4	+0.5	-0.4	-0.7	-1.2
(7) Percent Change in Shares from Tax Base Changes [(4)/(3)]	—	+3.4	-2.8	-2.1	+2.1	+3.0
(8) Total Percent Change in Shares [(4)/(1)]	—	-3.5	-2.9	-1.3	+3.9	+16.7

CONCLUSIONS

This chapter has compared tax liabilities under 1980 and 1983 tax laws under the assumption of a constant 1983 level and distribution of income. These comparisons made it possible to isolate the static effects of the changes in tax law.

ERTA and TEFRA lowered 1983 tax liabilities by about 12 percent compared to what they would have been if the equivalent of 1980 tax law had been in effect in 1983. The static tax reduction between 1980 and 1983 was proportion-

ately greatest for taxpayers in the top quartile of the income distribution. Taxpayers in the upper 1 percent of the income distribution received a 15 percent reduction in taxes from these static changes. As a result, the share of taxes paid by this group would have declined by 3.5 percent if the income distribution had remained unchanged. Because the ERTA tax cuts were not sufficient to offset the effects of bracket creep, relative to 1980, taxpayers in the bottom half of the income distribution would have paid a greater share of tax liabilities in 1983, given a fixed income distribution. This relative tax increase at the bottom would have occurred because the benefits of lower tax rates and increased deductions for this group were more than offset by erosion of the real value of personal exemptions and the ZBA.

Other simulations presented in this chapter have shown how different components of the tax law changes contributed to the static effect. Changes in the tax base, including expanded IRA deductions and the second earner deduction, lowered taxes by a greater proportion for taxpayers in the upper quartile of the income distribution.

The next chapter relaxes the assumption of a constant 1983 distribution of income and considers how the distribution of incomes changed between 1980 and 1983, and to what extent these changes can be attributed to changes in tax law.

CHAPTER IV

BEHAVIORAL RESPONSES TO TAX POLICY CHANGES:

THE EVIDENCE FROM 1980-83

Chapters II and III examined recent changes in the income tax burden from two very different perspectives. Chapter II described what actually happened to the growth in taxes paid among income groups between 1980 and 1983. The data show that the largest percentage increase in taxes paid was by returns in the top percentile of the income distribution. This occurred because income grew more rapidly in the top group than for taxpayers as a whole, with growth in the realization of capital gains contributing a large amount of the increase in relative income in the top percentile.

In Chapter III, the effects of the changes in tax policy resulting both from statutory changes in ERTA and TEFRA and from the movement of taxpayers into higher rate brackets were examined, assuming that these changes did not affect the level of economic activity or the distribution of income. These static estimates show that the largest percentage tax reduction went to returns in the top quarter of the income distribution, while returns in the bottom half experienced a slight tax increase.

This difference between the actual change in the distribution of taxes paid and the distribution based on static analysis suggests the possibility that higher tax payments by the top percentile of returns may have resulted at least in part from behavioral responses to the ERTA reductions in marginal tax rates. These behavioral responses either could have caused personal income to grow faster than average for taxpayers in the upper part of the income distribution, or taxable income to increase relative to personal income for these taxpayers. Behavioral changes that could have raised the tax base relative to personal income include:

- Increased realization of capital gains relative to personal income;

- An increase in the ratio of taxable money wages to total compensation resulting from, for example, reduced demand by employees for nontaxable fringe benefits such as employer contributions for medical insurance;

■ A reduction in the ratio of itemized deductions to personal income result-
  ing from, for example, smaller growth in charitable contributions or in
  borrowing to finance purchases of homes, automobiles, or other consumer
  durables; and

■ An increase in the proportion of income from investments attributable to
  taxable sources, such as interest and dividends, rather than nontaxable
  sources such as corporate retained earnings, tax-exempt bonds, or "tax-
  shelter" investments that are allowed very favorable capital recovery deduc-
  tions under current law.

A number of these behavioral effects have been studied by economists.
Separate studies have examined the effects of changes in marginal tax rates on
realized capital gains, charitable contributions, labor supply (especially of second
earners), and demand for fringe benefits, among others. Behavioral responses
to tax changes, however, were not the only factor that might have changed the
distribution of incomes, and thus the distribution of taxes paid, during this
period.

ERTA reduced corporate income taxes by instituting the Accelerated Cost
Recovery System (ACRS) of depreciation deductions and by liberalizing the In-
vestment Tax Credit (ITC).[1] TEFRA took back some of these reductions, but
the net effect of the two tax bills was to lower corporate taxes, leaving cor-
porations with higher after-tax incomes. This income was either distributed as
dividends, directly increasing individual incomes, or kept by the corporation as
retained earnings. Higher retained earnings tend to increase the value of cor-
porate stock. This increases individual incomes through higher realized capital
gains when this stock is sold. Thus some change in the distribution of in-
dividual incomes resulted directly from the corporate tax changes in ERTA and
TEFRA.

In addition to tax policy changes, between 1980 and 1983 there were also
significant changes in monetary policy, in the level and composition of federal
spending, in deficits, and in regulatory policies. The economy experienced a
major recession, a significant decline in the rate of inflation, and considerable
instability in both real and nominal interest rates. All of these factors also
contributed to changes in the distribution of income between 1980 and 1983,
but their effects are difficult to quantify precisely.

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1.   Other provisions affecting corporations included a reduction of the graduated rates for small
     corporations and expensing of the first $5,000 of depreciable equipment.

This chapter develops a simple baseline projection that assumes that, in the absence of tax policy changes, income items and deductions per return would have grown at the rate of personal income per capita between 1980 and 1983 in all income groups. This assumption that all incomes grew at the average growth rate between 1980 and 1983 implies that the distribution of income remained unchanged.

This baseline projection is then compared with a slightly altered projection that allows the net corporate tax cuts in ERTA and TEFRA to change the distribution of individual incomes by increasing dividends and realized capital gains, but in which average incomes grow as in the baseline.

Next, this projection is compared with actual levels of different components of income and deductions for 1983, to show in more detail factors that might explain the higher-than-average growth in realizations of capital gains and in wages for the top percentile of returns between 1980 and 1983. This analysis in effect assumes that tax policy changes did not alter the overall growth of the economy but may have affected the distribution of income and also the ratio of the tax base to personal income per capita.

This chapter ends with a brief discussion of how other economic changes may have altered the distribution of income and taxes paid over this period.

COMPARISON OF ACTUAL AND PROJECTED TAXES AND INCOME FOR 1983

Table IV.1 compares actual and projected taxes by income groups for 1983. The first row of the table shows actual taxes paid in 1980. The second row of the table shows simulated baseline taxes for 1983. These taxes were computed by "growing" income per return by 21.9 percent, the rate of growth of personal income per capita between 1980 and 1983, and using indexed 1980 tax law.[2] Actual 1983 taxes paid, as shown in the fifth row of the table, are about $40 billion lower than projected taxes. Of this amount, slightly more than $3 billion results from lower taxes paid by the top percentile of returns, compared to the projected baseline.

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2. Because total returns increased by about 2.6 percent over this period, the projected increase in income taxes paid is about 25 percent.

TABLE IV.1.   EFFECTS OF TAX POLICY CHANGES: COMPARISON OF PROJECTED AND ACTUAL
TAXES PAID BY INCOME GROUPS   (In billions of dollars)

	Total	Expanded Adjusted Gross Income Group				
		Group 1 (1%)	Group 2 (2-5%)	Group 3 (6-25%)	Group 4 (26-50%)	Group 5 (51-95%)
(1) Actual Taxes— 1980	250.3	48.0	44.6	90.7	49.7	17.3
(2) Baseline— (Indexed 1980 law; 1980 distribution; 1983 level)	312.6	59.8	55.6	113.5	62.1	21.7
(3) Baseline Adjusted for Corporate Tax Cuts	313.2	60.5	55.7	113.3	62.0	21.6
(4) Indexed 1980 Law; 1983 Distribution; 1983 Level	311.1	66.6	54.8	112.4	58.7	18.6
(5) Actual Taxes— 1983	273.1	56.4	46.7	97.4	53.5	19.1
Static Change [(5)-(4)]	-38.0	-10.2	-8.1	-15.0	-5.2	+0.5
Feedback and Other [(4)-(3)]	-2.1	+6.1	-0.9	-0.9	-3.3	-3.0
Corporate Tax Cut Change [(3)-(2)]	+0.6	+0.7	+0.1	-0.2	-0.1	-0.1
Total Change [(5)-(2)]	-39.5	-3.4	-8.9	-16.1	-8.6	-2.6

The change in taxes paid between 1980 and 1983 can be divided into three components--the effect of the corporate tax cuts, static changes, and other, including feedback effects. The third row of the table shows the effect of simulating baseline individual income taxes for 1983 using indexed 1980 law and the 1980 distribution of income after changing that distribution but not the level of income to reflect increased dividends and realized capital gains from the corporate tax changes. The difference between the second and third rows is the effect of the corporate tax changes on individual taxes. This effect is small, an increase in taxes of less than $1 billion, most of which is attributable to taxpayers in the upper 1 percent of the income distribution.

The estimate of the effect of the corporate tax cut on individual income tax payments in 1983 is based on the static estimate of the revenue loss from the corporate tax provisions of ERTA, offset by the revenue gain from corporate provisions in TEFRA.[3]   CBO estimates that the net effect of these provisions was a revenue loss of about $13.4 billion in 1983 compared with pre-ERTA law.   However, the total revenue loss in 1983 overstates the permanent reduction in corporate taxes because larger depreciation deductions under ACRS (relative to 1980 law) in the early years of an asset's life are followed by smaller deductions later.   In a sense, ACRS can be thought of as an interest-free loan, rather than as a permanent reduction in taxes.

The permanent annual tax savings from corporate tax provisions in ERTA and TEFRA are thus only a portion of the estimated one-year tax saving for 1983.   CBO estimates these benefits to be roughly $9.1 billion at 1983 levels.[4] The ratio of the $9.1 billion tax cut to 1983 after-tax profits is used to attribute a portion of actual 1983 dividends received by individuals to the corporate tax cut.[5]   This fraction of dividends was added to simulated 1983 taxable income for returns that reported dividends in 1980.

The ratio of the tax cut to 1983 after-tax profits[6] is also used to attribute to the corporate tax cut a portion of 1983 capital gains from sales of corporate stock.   Data from the IRS 1981 Capital Assets File were used to estimate the share of total capital gains in AGI that come from sales of corporate stock.[7] The fraction of capital gains attributable to the corporate tax changes was added

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3.   These computations implicitly assume that corporate taxes are paid by corporate shareholders. This static assumption is analogous to the assumption that individual income taxes are paid by individual recipients of wages, interest, dividends, and capital gains, and not shifted to others through reductions in work effort and saving, or changes in the composition of investment.   Most economists believe that, in the longer run, corporate taxes are shifted either to other owners of capital or to wage earners by reducing the size of the capital stock.

4.   The revenue loss from ACRS-related provisions of ERTA (offset by those from TEFRA) becomes a relatively stable fraction of GNP by 1990. This 1990 share of GNP was used to allocate the 1983 revenue loss between the permanent benefit to corporations and the temporary benefit of tax deferral. The revenue loss from provisions that do not involve deferral of taxes is taken as a permanent tax cut.

5.   The purpose here is to allocate actual 1983 dividends and capital gains between those attributable to the corporate tax cut and those unrelated to the corporate cut. A more sophisticated analysis of the relationships between the corporate tax cuts and individual income taxes would require a separate study, and is outside the scope of this effort.

6.   After-tax profits are as reported in the *Economic Report of the President* (February 1986), p. 351.

7.   1981 is the most recent year for which data on asset sales reported on tax returns are available.

to simulated 1983 taxable income for returns that reported net capital gains in AGI in 1980.

After adjusting dividends and capital gains for increases due to the corporate tax cuts, total income was readjusted to maintain an average growth rate of 21.9 percent.

The fourth row of Table IV.1 shows the results of simulating indexed 1980 law on the 1983 level and distribution of income. These are the taxes that would have been paid if adjusted 1980 law had been applied to 1983 taxpayers. The difference between rows (4) and (5) is the "static" effect of the tax policy changes that was analyzed in Chapter III. This static effect reduced tax liabilities by about $38 billion, of which slightly more than $10.2 billion was a tax cut for the highest percentile of returns.

The difference between rows (3) and (4) takes account of all factors other than the corporate effects and the "static" changes. These "other" effects--including behavioral "feedback"--are estimated at about $2 billion for all taxpayers, not a significant amount given the imprecision of these estimates. For the top percentile, however, "feedback and other" increased taxes paid by $6.1 billion, offsetting about 60 percent of the static tax cut for this group.

Another way to look at the data in Table IV.1 is to compare taxes paid by the top percentile with total taxes. The share paid by Group 1 is 19.1 percent in the baseline 1983 projection. As seen in Chapter III, the static change by itself would have reduced the share of taxes paid by this group by about 3.5 percent, resulting in an 18.5 percent share of total tax liabilities for taxpayers in the upper 1 percent of the income distribution. The actual tax share paid by the top percentile, however, increased to 20.6 percent in 1983.

Table IV.2 looks at the components that contributed to higher-than-projected growth in taxes paid per return for the top percentile of returns. The first column of the table shows actual 1980 taxable income, types of income, deductions, and taxes paid per return. The second column shows projected 1983 values, computed by increasing total income per return by 21.9 percent, but allowing for different growth rates of certain types of income. (Capital gains and dividends were increased by a larger percent to reflect the effects of the corporate tax reductions, while all other incomes were increased by a slightly smaller percent.) This is compared to actual 1983 values for income, deductions, and taxes paid per return in Column (3). The difference between actual and projected values is shown in Column (4). Column (5) shows the percentage increase in taxable income attributable to the excess of the actual value of each item over its projected value.

The two items that contribute significantly to the faster than average growth in taxable income in the top percentile are capital gains in AGI and wages and

salaries. Average capital gains in AGI per return are about $10,400 greater than the projected amount; this difference is equal to 7.3 percent of projected taxable income. Wages and salaries per return are about $7,650 billion above the projected amount, an amount equal to 5.4 percent of projected taxable income in the top percentile. Note that 1983 taxable income is significantly

TABLE IV.2. COMPARISON OF ACTUAL AND PROJECTED INCOME AND DEDUCTIONS PER RETURN: SELECTED ITEMS: TOP PERCENTILE OF RETURNS

Item	(1) Actual 1980 ($)	(2) Projected 1983 ($)	(3) Actual 1983 ($)	(4) Actual Minus Projected 1983 ($)	(5) Effect on Taxable Income a/ (%)	(6) Actual Growth 1980- 1983 b/ (%)
Taxable Income	116,237	142,448	147,664	5,216		27.0
Wages and salaries	76,264	92,153	99,804	7,651	5.4	30.9
Interest income	13,917	16,922	18,798	1,876	1.3	35.1
Dividends in AGI	17,034	22,126	18,827	-3,299	-2.3	10.5
Net capital gains in AGI	18,441	22,984	33,404	10,420	7.3	81.1
Net capital losses	307	382	278	-104	0.1	-9.5
Net business income	14,667	17,613	10,253	-7,360	-5.2	-30.1
Other	7,974	9,541	12,747	3,206	2.3	59.9
Excess Itemized Deductions	29,007	35,178	40,579	5,401	-3.8	39.9
Interest deductions	9,651	11,710	15,125	3,415	-2.4	56.7
Medical deductions	623	763	502	-261	0.2	-19.4
Charitable deductions	6,057	7,323	8,041	718	-0.5	32.8
TOTAL TAX	50,850	62,498	58,741	-3,757		15.5

a. Column (4)/$142,448 (projected 1983 taxable income).

b. (Column (3) - Column (1))/Column (1).

reduced by the lower-than-projected amount of net business income and the higher-than-projected amount of excess itemized deductions.[8]

The data in Table IV.2 suggest that growth in capital gains and wage and salary income are the two most likely sources of behavioral response to explain the increase in the tax share of the top percentile of returns. The next section of this chapter, therefore, examines the 1980-1983 data on capital gains and wages and salaries in more detail to assess the possible contribution of behavioral responses.

POSSIBLE BEHAVIORAL EXPLANATIONS: CAPITAL GAINS AND WAGES AND SALARIES

Capital Gains

As shown in Table IV.2, capital gains per return in the top percentile increased by a much larger percentage than overall personal income per capita between 1980 and 1983. This contributed greatly to the increased tax share paid by the top percentile of returns.

Table IV.3 shows growth in capital gains realizations by income group and the difference in the average marginal tax rate on 1983 capital gains between 1983 law and indexed 1980 law. Capital gains per return increased by 84.2 percent for the top group--from $42,906 in 1980 to $79,053 in 1983. For all other groups, both the amount of capital gains per return and the growth rate were

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8.   It is expected that itemized deductions might have grown less rapidly for the top group, due to the reduced benefit from deductions at a lower marginal tax rate. The fact that they did not, however, does not in itself contradict assertions that marginal tax rates affect behavior. For example, interest deductions above the projected amount could result from changes in interest rates rather than from any response to lower marginal tax rates. Interest rates on new home mortgage loans were less than 10 percent throughout the 1960s and 1970s until 1979, but averaged over 12.5 percent for every year between 1980 and 1983. The higher interest deductions may reflect the cumulative effect of higher interest rates on loans originated after 1980.

Charitable contributions also increased more rapidly than income in the top group, despite the fact that lower marginal tax rates by themselves raise the after-tax cost of charitable giving. Again, this should not be interpreted as a refutation of econometric work that shows a negative relationship between charitable contributions and marginal tax rates, holding other factors constant. Rather, it merely illustrates that however much marginal tax rates may have reduced charitable and other deductions below what they would have been under 1980 law, this cannot explain the increase in the tax share of the top percentile between 1980 and 1983.

TABLE IV.3. GROWTH IN CAPITAL GAINS AND CHANGES IN MARGINAL TAX RATES ON
GAINS: 1980-1983

	Total	Expanded Adjusted Gross Income Group				
		Group 1 (1%)	Group 2 (2-5%)	Group 3 (6-25%)	Group 4 (26-50%)	Group 5 (51-95%)
Gains/Return						
1980 ($)	794	42,906	3,407	640	214	65
1983 ($)	1,280	79,053	4,582	778	287	93
Growth (%)	61.2	84.2	34.5	21.6	34.1	43.1
Marginal Tax Rate on Gains						
1980 (%)	19.4	25.2	15.1	10.5	6.7	2.7
1983 (%)	15.6	19.4	15.0	9.3	5.8	2.5
Change (%)	-19.3	-23.0	-0.5	-11.2	-11.0	0.1
Marginal After-Tax Proceeds of Gains						
1980 (%)	80.6	74.8	84.9	89.5	93.3	97.3
1983 (%)	84.4	80.6	85.0	90.7	94.2	97.5
Change	4.7	7.8	0.1	1.3	1.0	0.2

much smaller. The marginal tax rate on capital gains in 1983 for the top group was 23 percent lower than the corresponding marginal tax rate under indexed 1980 law, compared to at most 11 percent for all the other groups.[9] More importantly, the marginal after-tax proceeds per dollar of pretax capital gains were almost 8 percent higher under 1983 law for group 1, but no more than 1.3 percent higher for all other groups. (Marginal after-tax proceeds are one minus the marginal tax rate. They are higher for the top percentile because the top percentile had a larger percentage decline in the marginal tax rate and because marginal tax rates are higher in the top groups than in lower groups, so that an equal percentage reduction in marginal rates in all groups produces a larger percentage increase in after-tax income in the highest income groups.) Thus,

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9. For each group, the marginal tax rate on capital gains is computed by adding a dollar to net long-term capital gains of all *returns with positive capital gains* on the SOI data file and computing the additional tax liability per dollar of additional capital gain for each return. This marginal tax rate is then weighted by net capital gains to compute a weighted average of the marginal tax rate on capital gains.

the increase in realizations was largest for the group with the greatest additional incentive to realize more gains.

A number of studies in the past decade have identified a significant negative relationship betwen realization of capital gains amd marginal tax rates. Because gains are taxed only when realized, not as accrued, and because gains passed at death escape tax entirely, there is a strong incentive to defer or avoid realizations if tax rates on realized gains become too high. Some studies have found that lower tax rates on capital gains induce so much additional realization that revenue from capital gains taxes increases; others find a smaller response, showing that revenue decreases when the tax rate is lowered below levels prevailing in recent years.[10]   The Department of the Treasury recently published a report on the capital gains tax reductions of 1978 that includes detailed econometric work on factors influencing the realization of capital gains.[11] For purposes of illustration, this study uses an equation similar to the one estimated in the Treasury report to examine the extent to which the increased realizations of capital gains between 1980 and 1983 may be attributable to tax policy changes.

The Treasury report found that the growth in capital gains in any year was positively related to the change in the inflationary and real components of gross national product (GNP) and the change in the value of corporate shares held by individuals, negatively related to the change in the maximum marginal tax rate on capital gains, and positively related to the change in the maximum marginal tax rate on capital gains in the previous year.[12]   The lagged tax rate ef-

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10.   For examples of these studies, see Martin S. Feldstein, Joel Slemrod, and Shlomo Yitzhaki, "The Effects of Taxation on the Selling of Corporate Stock and the Realization of Capital Gains," *Quarterly Journal of Economics*, vol. 94 (June 1980) pp. 777-791; Joseph J. Minarik, "The Effect of Taxation on the Selling of Corporate Stock and the Realization of Capital Gains: Comment," *Quarterly Journal of Economics*, vol. 98 (February 1984); Gerald E. Auten and Charles Clotfelter, "Permanent Versus Transitory Tax Effects and the Realization of Capital Gains," *Quarterly Journal of Economics*, vol. XCVII (November 1982) pp. 613-632; Joseph J. Minarik, "Capital Gains," in Henry Aaron and Joseph Pechman, eds., *How Taxes Affect Economic Behavior* (Washington, D.C., The Brookings Institution, 1981) pp. 241-277; Martin S. Feldstein and Shlomo Yitzhaki, "The Effects of the Capital Gains Tax on the Selling and Switching of Common Stock," *Journal of Public Economics*, vol. 9 (February 1978) pp. 17-36; Gerald E. Auten, "Capital Gains: An Evaluation of the 1978 and 1981 Tax Cuts," in Charls E. Walker and Mark A. Bloomfield, eds., *New Directions in Federal Tax Policy For the 1980s*, (Cambridge, Massachusetts: Ballinger Publishing Company, 1983); and Lawrence B. Lindsey, "Capital Gains: Realizations and Revenues," (Cambridge, Mass: National Bureau of Economic Research Inc., April 1986), Working Paper No. 1893.

11.   See Office of the Secretary of the Treasury, Office of Tax Analysis, *Report to Congress on the Capital Gains Tax Reductions of 1978* (September, 1985).

12.   See Treasury Department, *Capital Gains Tax Reductions of 1978*, p. 176. The maximum marginal tax rate on capital gains is defined as the average marginal tax rate on capital gains for taxpayers with AGI greater than $200,000 in 1982 dollars.

effect is smaller than the immediate one. The two effects of changes in marginal tax rates--the immediate and lagged effect--reflect observations that the first-year response of capital gains realizations to changes in the marginal tax rate is greater than the permanent response. That is, a permanent lowering of marginal tax rates on gains results in a permanent increase in gains realizations, but this increase is smaller than the increase in the year the tax rate changes.

The Treasury equation that explained year-to-year changes in realized capital gains was estimated for the years 1954 through 1982. CBO estimated a modified version of the Treasury equation for the years 1954 through 1983. The difference between the CBO equation and the Treasury equation are: (1) CBO expresses the variables in the equations as levels, instead of rates of change; (2) CBO uses a logarithmic functional form, while the Treasury equation is linear; (3) CBO uses real personal income instead of real GNP as the measure of income in the equation; (4) CBO uses real stock market values (deflated by the GNP deflator) instead of nominal stock market values as an explanatory variable in the equation (so that the effects of price level changes and real share value changes are separated); and (5) CBO altered the definition of the marginal tax rate on gains from that used by Treasury, to take account of capital gains taxes paid by taxpayers below the top income group. The CBO capital gains equation is described in Appendix F.

The CBO equation explains about 98 percent of the year-to- year variation in capital gains realizations between 1954 and 1983. As in the Treasury study, capital gains are found to be positively related to real income, the price level, and the value of corporate shares held by individuals. The tax variable in the CBO equation is one minus the marginal tax rate; this measures the after-tax proceeds from realizations of capital gains. Realizations are found to be positively related to after-tax proceeds in the current year and negatively related to after-tax proceeds in the prior year. This is analogous to the Treasury result that capital gains are negatively related to the marginal tax rate in the current year and positively related to the prior year's marginal tax rate.

The CBO equation overpredicts capital gains realizations by about 3 percent in 1980, 5 percent in 1981, and 8 percent in 1982, but underpredicts realizations by more than 13 percent in 1983. (The Treasury equation underpredicts 1983 realizations by an even larger amount.) The error for 1983 means that a significant part of the growth in capital gains above the baseline between 1980 and 1983 cannot be explained by the historical relationship between capital gains realizations and real income, the price level, stock market values, and marginal tax rates on gains. This means either that some major determinants of capital gains have not been adequately captured by the Treasury and CBO equa-

tions or that other factors unique to 1983 resulted in increased realizations of gains.[13]

Table IV.4 illustrates the effects of different factors on the growth of capital gains realizations between 1980 and 1983. Row (1) of the table shows that capital gains realizations, defined as net long-term gains in excess of short-term losses plus net short-term gains for taxpayers with net gains, increased from $74.6 billion in 1980 to $123.3 billion in 1983. As shown in Row (2), the CBO equation predicts gains of $77.7 billion in 1980, which is very close to actual gains, but predicts gains of $108.0 billion in 1983, about $15.3 billion below the actual amount.

Row (3) of the table shows gains that would have been predicted by the CBO equation if marginal tax rates on capital gains had remained unchanged between 1980 and 1983 and if stock market values had increased at the same rate as personal income during that period. Marginal tax rates on capital gains, as defined in the estimating equation, decreased from 19.3 percent in 1980 to 15.4 percent in 1983.[14] The value of corporate shares held by individuals actually declined between 1980 and 1981, but then increased more rapidly than personal income between 1981 and 1983. Over the entire three-year period, stock values increased by a slightly smaller percentage than personal income. The lower gains due to the stock market effect were outweighed, however, by the increase due to lower tax rates. As a result, predicted gains under 1983 law [row (2)] are about $3.6 billion higher than gains predicted by the equation at 1980 tax rates and if the stock market had grown at the same rate as personal income [row(3)].

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13.   One possible explanation of the 1983 forecast error is that capital gains enforcement provisions were significantly tightened in TEFRA, enacted in 1982. Under one provision of TEFRA, securities brokers were for the first time required to report transactions of customers to the Internal Revenue Service and also to furnish information returns to customers. It is believed that there was significant noncompliance prior to 1982; a preliminary 1981 IRS estimate that capital gains reporting was below 60 percent was cited by the Joint Tax Committee as one reason for the new enforcement provisions in TEFRA. See Joint Committee on Taxation, *General Explanation of the Revenue Provisions of the Tax Equity and Fiscal Responsibility Act of 1982*, 97:2 (December 31, 1982), p. 194.

   If improved compliance is responsible for the apparent upward shift in capital gains realizations in 1983, then this higher rate of realizations, compared to those predicted by the CBO equation, should continue in 1984 and 1985. Final data on capital gains realizations for 1984 are not yet available; preliminary figures suggest continued large growth in realizations in 1984.

14.   The marginal tax rate used in the equation is an average rate on gains realized in 6 income groups, weighted by 1983 realizations by income group. See Appendix F.

TABLE IV.4.   ESTIMATED EFFECTS OF DIFFERENT FACTORS ON
               CAPITAL GAINS REALIZATIONS: 1980-1983
               (By calendar year, in billions of dollars)

	1980	1981	1982	1983
(1) Capital Gains, Actual a/	74.6	80.8	90.2	123.3
(2) Predicted Capital Gains, CBO equation b/	77.7	85.4	98.6	108.0
(3) Predicted Capital Gains, CBO Equation, Indexed 1980 Law c/	77.7	89.9	96.4	104.3
(4) Actual Gains Minus Predicted Gains, 1980 Law [(1)-(3)]	-3.2	-9.1	-6.2	19.0
(5) Effect of Tax Rates d/	0.0	4.1	8.2	5.2
(6) Effect of Stock Market Values e/	0.0	-8.3	-5.6	-1.5
(7) Interaction Term	0.0	-0.4	-0.5	-0.1
(8) Unexplained [(1)-(2)]	-3.2	-4.6	-8.4	15.3
(9) ERTA Baseline f/	74.6	83.2	88.2	93.7
Predicted Gains, 1980 Law Minus ERTA Baseline [(3)-(9)] g/	3.2	6.7	8.2	10.6

a. Net long-term capital gains in excess of short-term losses plus net short-term gains for returns
   with gains.

b. The equation is described in Appendix F.

c. Derived by assuming marginal tax rates on capital gains remained at 1980 level and that stock market
   values increased by the same annual percentage rate as personal income.

d. Sum of contribution of current and lagged maximum marginal tax rate on capital gains.

e. Contribution of difference between actual amount and amount with growth equal to rate of growth of
   personal income.

f. Computed by growing 1980 gains at same rate as growth in personal income.

g. Estimated effect of income growth on ratio of capital gains to income.

Rows (5) to (8) of the table show the components of the difference be-
tween actual gains [row (1)] and gains predicted by the equation under 1980
law [row (3)]. In 1983, actual gains were $19.0 billion in excess of gains pre-
dicted under 1980 law. Of this amount, the coefficients of the equation imply
that $5.2 billion, or about 27 percent, was due to lower marginal tax rates on
capital gains. ERTA lowered the maximum marginal tax rate on capital gains
to 20 percent, effective June 9, 1981.[15] The lower maximum rate was in ef-
fect for all of 1982 and for years afterward. As a result of changes in the top
marginal rate and in individual marginal tax rates generally, the estimated aver-
age marginal tax rate on gains dropped from 19.3 percent in 1980 to 17.8 per-
cent in 1981 and 15.5 percent in 1982. The maximum marginal tax rate on
capital gains remained at 20 percent in 1983, but the average marginal tax rate
declined slightly further to 15.4 percent because of lower rates for taxpayers
below the top bracket. Thus, realizations in both 1981 and 1982 reflect the
large first-year effect of lowering marginal tax rates, while in 1983 the first-year
effect is very small. The increase in realizations attributed to ERTA in 1983
reflects mainly the smaller estimated response to a long-run reduction in the
tax rate on capital gains.

The contribution of the stock market to 1983 realizations is slightly nega-
tive ($-1.5 billion) because the value of corporate shares held by individuals in-
creased by slightly less than the growth in personal income between 1980 and
1983.[16] The largest component of the difference between actual gains and gains
predicted under 1980 law, $15.3 billion, is not explained by the equation.

Finally, row (9) of the table, labelled the "ERTA baseline" shows what capi-
tal gains realizations would have been if gains had increased at the same rate
as personal income. These are the baseline numbers used in the other tables
in this paper. The difference between predicted gains under 1980 law and the
ERTA baseline is $10.6 billion in 1983. This difference is mostly due to the
fact that the coefficients of the estimating equation for gains imply that real-
ized gains rise more than proportionately with increases in personal income.
Thus, the ERTA baseline may understate the secular growth rate in gains that

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15.   ERTA was enacted in August, 1981, but the capital gains provisions had been introduced ear-
      lier in the legislative process and may have been anticipated prior to final enactment.

16.   The increase in the nominal value of corporate equities held by households between the end
      of 1980 and the end of 1983 was 22.7 percent. This consisted of a decline of 4.5 percent
      in 1981, an increase of 12.4 percent in 1982 and an increase of 14.4 percent in 1983. Thus,
      while the change in stock market values, compared to the baseline, contributed to slightly
      lower growth in capital gains realizations over the three-year period, it contributed positively
      to the growth of realizations in both 1982 and 1983.

should have been expected, absent any tax policy change, and so result in too large an estimate of induced behavioral effects.

Table IV.5 shows a range of estimated effects of additional capital gains realizations (defined as actual realizations minus the amount predicted under 1980 law) on tax payments by the top percentile of returns. The CBO and Treasury equations explain only total capital gains realizations, not their distribution among income groups. The top three rows of Table IV.5 show that additional realizations of capital gains account for $3.7 billion of additional taxes paid by the top percentile in 1983, if the additional realizations are assumed to have all occurred among the top 1 percent of returns. Of this amount, the estimated induced realizations due to lower tax rates contributed $1.0 billion in taxes; the remaining $2.7 billion includes the stock market effect and the unex-

TABLE IV.5.   ESTIMATED EFFECTS OF ADDITIONAL CAPITAL GAINS
               REALIZATIONS ON TAXES PAID BY TOP PERCENTILE OF
               RETURNS: 1983 (In billions of dollars)

	Additional Realizations a/	Associated Revenue b/
Maximum Effect: All Additional Realizations in Top 1 Percent		
Total	19.0	3.7
Tax Rate Effect	5.2	1.0
Other or Unexplained	13.8	2.7
Minimum Effect: Additional Realizations Same Proportion in all Income Groups		
Total	11.7	2.3
Tax Rate Effect	3.2	0.6 ·

a.   Actual 1983 amounts in excess of projected realizations under 1980 law.

b.   Revenue from taxes on additional capital gains, at estimated 1983 marginal tax rate on capital
     gains. This is not a net revenue estimate, because it does not take account of lower revenues
     from those gains that would have been realized under 1980 law. If one assumes all induced gains
     were in the top 1 percent, the equation implies a static reduction from lower capital taxes of
     $4.2 billion, offset by a pickup of $1.0 billion from increased realizations for a net revenue
     loss of $3.2 billion. At the extreme, if all the additional realizations were attributable to
     the tax reduction, there would be a net revenue loss of only $0.1 billion.

plained residual.[17] On the other hand, if additional realizations are attributed among income groups in the same proportion as actual 1983 realizations, they account for $2.3 billion in additional tax payments by the top percentile. Of this amount, an estimated $0.6 billion is due to the induced effect of lower marginal tax rates.

Wages and Salaries

Table IV.6 shows that wage and salary income per return increased by 30.9 percent for the top percentile between 1980 and 1983, compared to an increase in wage and salary income per return of 18.8 percent for the entire population and an increase in per-capita personal income of 21.9 percent. The average marginal tax rate applied to wage and salary income of the top percentile in 1983 was slightly more than 10 percent less than the corresponding rate on wage and salary income under indexed 1980 law. The difference in the marginal tax rate on wages and salaries for the top percentile was about the same as the difference for the population as a whole.[18] Because the top percentile confronts higher marginal tax rates, however, the same percentage decline in marginal tax rates results in a greater percentage increase in net after-tax wage and salary income, per dollar of pre-tax wages, for the top percentile than for taxpayers generally. Marginal after-tax wages were slightly over 10 percent higher under 1983 law for the top percentile, compared to about 4 percent higher for taxpayers generally.

The relatively larger increase in after-tax wages for taxpayers in the top percentile of the income distribution is consistent with the hypothesis that the increase in wage and salary income for this group was at least partially a behavioral response to the tax changes. Economic theory, however, does not unambiguously predict that workers will respond to an increase in after-tax wages by increasing their hours of work. An increase in wages creates two offsetting

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17. The induced revenue from lower tax rates shown in the table is the additional net revenue from higher capital gains realizations in the top percentile, at the 1983 marginal tax rate on capital gains applied to those taxpayers. It does not represent the net revenue effect of lowering the capital gains tax rate, because it does not include the loss in revenue from lower tax rates on gains that would have been realized under 1980 law.

18. This occurred despite the greater percentage reduction in the top statutory rate (from 70 percent to 50 percent) than in other rates because many taxpayers in the highest income group benefited from the maximum tax on personal service income (50 percent) in tax years before 1981.

TABLE IV.6.   GROWTH IN WAGES AND SALARIES AND CHANGES IN
              MARGINAL TAX RATES ON WAGES AND SALARIES: 1980-1983

	Total	Expanded Adjusted Gross Income Group				
		Group 1 (1%)	Group 2 (2-5%)	Group 3 (6-25%)	Group 4 (26-50%)	Group 5 (51-95%)
Wages/Return						
1980 ($)	14,375	76,265	41,080	27,386	15,648	5,593
1983 ($)	17,074	99,804	52,230	32,941	17,890	6,289
Growth ($)	18.8	30.9	27.1	20.3	14.3	12.4
Marginal Tax Rate on Wages						
1980 (%)	29.0	50.0	42.8	31.4	23.5	15.5
1983 (%)	26.1	44.9	37.5	28.3	21.4	14.3
Change (%)	-10.0	-10.2	-12.4	-9.9	-8.9	-7.7
Marginal After-Tax Proceeds of Wage Income						
1980 (%)	71.0	50.0	57.2	68.6	76.5	84.5
1983 (%)	73.9	55.1	62.5	71.7	78.6	85.7
Change (%)	4.1	10.2	9.3	4.5	2.8	1.4

effects on the decision of how many hours to work. First, an increase in wages raises the return from working more hours (or increases the cost of leisure time) and hence creates an incentive for workers to work more hours. Second, an increase in wages also raises workers' incomes for a given amount of hours of work. With higher incomes, workers may be inclined to work less as they can afford to spend some of this increase in income on additional leisure time. If this latter effect dominates the former, workers actually may reduce their hours of work in response to an increase in net wages.

A number of econometric studies have attempted to quantify the effect of a change in wages on labor supply.[19] While the estimates from these studies vary a great deal, the typical results are that a change in wage rates has very little impact on the hours worked by prime-age males, but that the hours worked by women, and particular married women, are much more sensitive to changes in wage rates. More specifically, these results suggest that a 10 percent in-

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19. For a review of these econometric studies and a discussion of the theoretical issues concerning labor supply see Mark Killingsworth, *Labor Supply* (Cambridge: Cambridge University Press, 1983), particularly pp. 185-201, and Harvey S. Rosen, "Income Taxation and Labor Supply" in Joint Economic Committee, *Special Study on Economic Change*, 96:2 (December 26, 1980), vol. 6.

crease in wages would produce almost no change in the hours worked by men, but would lead to an increase in the hours worked by women by slightly more than 10 percent.

How might the observed changes in wage and salary incomes for the top percentile be reconciled with these econometric estimates? It is possible that much of the response in that percentile was by married women. In addition to the change in after-tax wages because of the rate reductions, the deduction for two-earner couples created a further increase in net after-tax wages for the lower-earning spouse in two earner couples, provided that these earnings were less than $30,000 per year. In the top percentile, marginal after-tax wages increased by 14 percent for the lower earner in two-earner couples.

However, the data appear not to support this hypothesis. In the upper 1 percent of the income distribution, not only did wage and salary income for married couples grow more slowly than wage and salary income for single filers, but the percentage of the top percentile that was composed of married couples declined slightly from 1980 to 1983.[20]

This suggests that either existing econometric estimates do not accurately portray the response of very-high-income workers to an increase in net after-tax wages, or that there are other explanations for the growth in wage and salary income in the top percentile. One such factor may have been a decline in hours of work by taxpayers in the lower part of the income distribution because of the change in economic conditions between 1980 and 1983. In 1983, the U.S. economy had still not fully recovered from the 1981-1982 recession. The national unemployment rate averaged 9.6 percent in 1983, compared to 7.1 percent in 1980. A rise in the rate of unemployment increases the percentage of wages and salaries earned by workers in higher-income groups because the incidence of unemployment is generally concentrated among low-wage workers.[21]

Finally the increase in wage and salary income in the top percentile may reflect a change in the form of compensation rather than an increase in hours of work. A reduction in marginal tax rates would reduce the demand by work-

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20. It is still possible that the wage and salary income for two-earner married couples grew faster than average but not fast enough to offset the slower growth in earnings among one-earner married couples. Unfortunately, it is not possible to identify from the 1980 data which of the married couples were two-earner couples.

21. If high unemployment resulting from the 1981-1982 recession had been the primary reason for the change in the distribution of wage income, one would expect that relatively slower growth of wages and salaries in the top percentile, compared to other groups, would accompany the decline in unemployment in 1984 and 1985. Detailed tax return data on the distribution of components of income for years after 1983 are not yet available.

ers for tax-deferred or tax-exempt remuneration and hence would increase tax-able money wage and salary income.

OTHER SOURCES OF CHANGES IN THE DISTRIBUTION OF INCOME

The previous section has reviewed the potential effects of tax rate changes on two major sources of the shift in the distribution of income toward the top per-centile between 1980 and 1983--higher capital gains realizations and higher wages. This section briefly reviews changes in economic conditions and policies, other than those directly associated with changes in tax policy, that might have al-tered the distribution of income or its components between 1980 and 1983. While these changes probably increased the share of income of upper-income groups, there is no basis for quantifying their effects.

Economic Conditions in 1980 and 1983

The year 1980 was marked by a brief recession, which followed four years of steady expansion. The recession was immediately followed by a rapid, though short, recovery, with both interest rates and inflation increasing. In contrast, the year 1983 was the first full year of the extended recovery that followed the deepest recession trough of the postwar period. The rate of inflation had declined significantly from that experienced in previous years and remained low. Interest rates were high by historical standards, but were gradually declining.

Effects of Unemployment

In 1980, unemployment was 6.1 percent at the beginning of the year, but in-creased to a peak of 7.5 percent during that year's brief recession. It averaged 7.1 percent for the entire year. The unemployment rate, though declining, was higher throughout 1983 than at any time during 1980. It was 10.4 percent at the beginning the year and 8.5 percent at the end, averaging 9.6 percent for the entire year.

A number of studies have found that recessions increase the income shares of high-income groups. This results largely from increases in unemployment rates and a reduction in labor force participation rates, which are concentrated

among low-wage earners.[22]   The wage share of GNP rises during a recession, but the distribution of wages shifts toward high-wage groups. In contrast, Mirer's study of the 1970 recession found that families expected to have low incomes (because of occupation or sources of income) improved their relative positions, at least temporarily, even though there was an overall increase in the poverty population.[23]

Effects of Interest Rates

On average, interest rates were much higher in 1980 than in 1983. The T-bill rate averaged 11.6 percent in 1980 and 8.6 percent in 1983; the prime rate was 15.3 percent in 1980 and 10.8 percent in 1983. At the same time, reported interest income increased at a more rapid rate than income generally between 1980 and 1983, as did interest deductions.

Although interest rates were generally declining in this period, average interest rates paid and received may have been increasing. One factor causing interest rates received by individuals to rise was the deregulation of financial markets, which was occurring during this period. Deregulation facilitated a shift from passbook savings accounts, with lower-than-market interest rates, to money market funds that allowed low- and moderate-income people with small amounts of wealth to earn market rates. As a result, while interest income increased 37 percent overall, it increased by 59 percent for those in percentiles 51 to 75

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22.   For examples of these studies, see Charles M. Beach, "Cyclical Sensitivity of Aggregate Income Inequality," *Review of Economics and Statistics*, vol. 59, no. 1 (February, 1977), pp. 56-66; Rebecca M. Blank and Alan S. Blinder, "Macroeconomics, Income Distribution, and Poverty" (Cambrige, Mass: National Bureau of Economic Research, February 1985), Working Paper No. 1567; Alan S. Blinder and Howard Y. Esaki, "Macroeconomic Activity and Income Distribution in the Postwar United States," *Review of Economics and Statistics*, vol. 60, no. 4 (1978), pp. 604-608; Brian W. Cashell, "Business Cycles: What Happens and Why?", Library of Congress, Congressional Research Service, Report No. 81-20E (February 5, 1981); Edward M. Gramlich and Deborah S. Laren, "How Widespread are Income Losses in a Recession?", in D. Lee Bawden, ed., *The Social Contract Revisited* (Washington, D.C.: The Urban Institute Press, 1984); Robin Hahnel and Howard J. Sherman, "Income Distribution and the Business Cycle: Three Conflicting Hypotheses," *Journal of Economic Issues*, (March 1982), pp. 49-73; and Barry Molefsky, "Recession in 1982: Economic Risks and Prospects," Library of Congress, Congressional Research Service, Report 82-31E (February 22, 1982).

23.   See Thad W. Mirer, "The Distributional Impact of the 1970 Recession," *Review of Economics and Statistics*, vol. 55 (July, 1973).

of the income distribution and by 78 percent for those between the 76th to 95th percentiles.   One factor contributing to the growth in interest deductions may be that interest rates on new loans were at historically high levels throughout the early 1980s. This could have caused average interest rates on outstanding loans to rise even though interest rates on new loans were declining after 1981.

Effects of Inflation

The rate of inflation declined dramatically between 1980 and 1983. The Consumer Price Index for urban consumers (CPI-U) increased by 12.4 percent in 1980, but only by 3.8 percent in 1983. The effect of inflation on the distribution of pretax income appears to be smaller than the effect of changes in the unemployment rate.   One recent study finds that inflation does not significantly shift the distribution of the largest component of taxable income, wages.[24] An earlier study found that inflation had only a modest effect on the distribution of income, increasing the shares of middle-income groups and reducing those of the lower- and higher-income groups.[25]   Thus, the effects of inflation on the pretax income distribution cannot be predicted with any confidence, but are probably much smaller than the effects of unemployment.

In summary, the overall effects of macroeconomic conditions should have been expected to increase the share of pretax income received by upper-income groups, even if there had been no tax policy changes or if there had been tax changes with equal effects throughout the income distribution. The results of previous empirical studies, however, do not provide the basis for a quantitative estimate of how much of the change in the income distribution between 1980 and 1983 can be attributed to short-run macroeconomic conditions.

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24.   For evidence that inflation hurts upper-income groups relatively more than lower income groups, see Blank and Blinder, "Macroeconomics, Income Distribution and Poverty."

25.   See E.C. Budd and D.E. Seiders, "The Impact of Inflation on the Distribution of Income and Wealth," *American Economic Review*, LXI (May 1971), pp. 128-138. The definition of income used by Budd and Seiders is broader than the one used in this paper because it includes types of income not reported on income tax forms (for example, many government transfer payments.)

CONCLUSIONS

This chapter has examined evidence as to the effects of tax policy changes between 1980 and 1983 on the distribution of income and taxes paid, with particular attention to the extent to which behavior induced by changes in tax policy may explain the higher tax share paid by taxpayers in the top percentile of the income distribution.

The data reported in this chapter compare incomes and taxes paid in 1983 to a baseline projection that holds average tax rates and income shares fixed at 1980 levels but assumes that incomes and deductions per return would have grown at the same rate as per capita personal income.[26] The difference between projected 1983 taxes using this baseline and actual 1983 taxes is about $40 billion.

This revenue loss can be disaggregated into "static" and "other" effects, where the static effect represents the loss of tax revenue that would have occurred if the distribution of income and deductions had remained the same. Overall, the total tax reduction was about the same as the "static" reduction. For the top percentile of taxpayers, however, the static tax reduction was $10 billion, while the overall reduction in taxes paid was slightly over $3 billion. Changes in the share of income accounted for by the top percentile of returns offset about 60 percent of the "static" reduction in taxes paid for that group. These changes in income shares caused the share of taxes paid by the top percentile of returns to increase from 19.1 percent in 1980 to 20.6 percent in 1983, instead of declining to 18.5 percent, as it would have if the distribution of income had remained unchanged.

A closer look at the data shows that the higher taxable income of the top percentile of returns, compared to the baseline projection, can be attributed to higher capital gains realizations and wages. Tax policy changes improved incentives to realize capital gains and to work for monetary compensation more for the top percentile of returns than for lower-income groups. The relative improvement in incentives for the top group was greater for capital gains than for wages. This suggests that at least some part of the higher capital gains and wages of the top income group could have been the result of a behavioral response to lower tax rates.

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26. For this purpose, unchanged tax "policy" is taken to include indexing personal exemptions and the width of rate brackets to the growth in per-capita personal income after 1980.

Econometric analysis of capital gains behavior suggests that lower tax rates explained only about 25 percent of the higher realizations of capital gains in 1983. Other influences, including improved compliance provisions enacted in TEFRA, also played a role in the unusually large increase in capital gains between 1982 and 1983. The increased share of wages and salaries earned by the top income group may be attributed in part to lower tax rates, but the observed increase in wages exceeds the expected changes based on existing econometric estimates of labor supply. Some of the increase in wage and salary income may have resulted from a change in the form of compensation from tax-exempt or tax-deferred compensation to taxable wages and salaries in response to the reduction in tax rates. The increased share of wages in the top percentile also may be attributable to the effects of high unemployment remaining after the 1981-1982 recession, because high unemployment associated with business cycles usually causes a relatively greater decline in earnings of lower-income groups.

The results are consistent with expectations that there would be some revenue-increasing feedback effects from lower marginal tax rates in the top brackets. These effects, however, should not be exaggerated. It does not appear, based on the estimates in this study, that induced effects were large enough to prevent a net revenue loss for taxpayers in the top income groups. Moreover, it is difficult to quantify how much the relatively greater increase in incomes at the top of the distribution can be attributed to behavioral responses to lower tax rates, how much to improvements in compliance provisions, and how much to overall economic changes not directly related to changes in the tax structure.

Induced economic and revenue effects from future tax reform legislation will depend on the exact provisions of any bill, as well as on whether statutory tax rates are lowered. The analysis of historical data in this paper suggests that lower marginal tax rates on wage and salary income and capital gains may not lose as much revenue as would be implied by estimates that do not take account of the induced increases in wages and salaries and capital gains of high-income earners. Over longer periods of time, there may be further economic benefits from improved work and savings incentives and greater productivity. The implications of the data, however, are sufficiently ambiguous to make it unwise, for budget planning purposes, to rely on induced responses to lower marginal tax rates to make tax reform revenue-neutral.

APPENDICES

APPENDIX A

OTHER ANALYSES OF DISTRIBUTIONAL EFFECTS

OF THE 1981 TAX CUTS

A number of authors have addressed the question of the distributional effects of the 1981 tax cuts. This appendix provides a brief chronology of several articles and studies, followed by a comparison of methodology between this study and a similar study performed by Lawrence B. Lindsey.

CHRONOLOGY OF ARTICLES AND STUDIES

<u>April 11, 1984</u>   Editorial, "Tricklenomics," *Wall Street Journal.*

The editorial examines the share of taxes paid by fixed AGI classes in 1981 and 1982 and claims that the cuts in marginal tax rates transferred the tax burden from the poor to the rich by drawing the rich out of tax shelters and channelling more income into taxable investment.

<u>April 22, 1984</u>   John Berry, "Tax Cuts Aren't Working As Promised," *Washington Post.*

Berry refutes early supply-side claims and says that, when adjusted for changes in their share of total income, the tax burden of the group with adjusted gross income (AGI) under $25,000 went up, not down, in 1982. In addition, Berry notes that income increased significantly at the top end of the income scale because of a surge in stock prices in the latter half of 1982 and a one-time "unlocking" effect on investment assets from the reduction in the maximum capital gains tax rate.

<u>May 7, 1984</u>   Editorial, "The Panic of 1984," *Wall Street Journal.*

The editorial cites statistics from 1981 to 1982 that show that rich people declared more income once tax rates were cut. It is noted that there was a 42 percent increase in revenues collected from people who reported $1 million or more.

June 11, 1984   Joseph Minarik, "The Tax Shares Boomlet," *Tax Notes.*

Minarik says that there is no basis for claims that the 1981 tax cuts produced the effects claimed by supply-siders. He notes that we should expect growth in the share of the over-$50,000 AGI group from 1981 to 1982 because of the recession, stock market boom, and inflation.

June 11, 1984   Kenneth Simonson, "'Supply Side' Tax Changes: Do They Soak The Rich Or Sock It To The Poor?" *Tax Notes.*

Simonson notes that it is impossible to draw firm conclusions from the data thus far. He also says that the share of taxes paid must be examined by a percentage of returns rather than fixed AGI classes.

June 26, 1984   James Gwartney and Richard Stroup, "The Redistributionist Tax Reduction," *The Wall Street Journal.*

Gwartney and Stroup examine the tax liability of income percentiles and conclude that the share of taxes collected from the rich in 1982 was greater than in 1981.

July 31, 1984   Donald Kiefer, "The 1982 Tax Return Data and Supply-Side Responses to the Tax Cut: Manifestation or Mirage?" Congressional Research Service Report No. 84-702E.

Kiefer says that the tax return data available thus far neither prove nor disprove claims that the 1981 tax cuts induced upper income taxpayers to pay more tax. Kiefer also notes that the published data are not suited to studying the responses of taxpayers because they do not report a comprehensive income measure or observe the same taxpayers from year to year.

August 20, 1984   Michael Schuyler, "The Fairness of the 1981 Tax Reductions," *Tax Notes.*

Schuyler cautions that an evaluation of ERTA should be based on long-run effects of investment, not on 1982 data.

November 19, 1984   Richard Vedder and Philippe Watel, "The Impact of Marginal Income Tax Rate Changes in the United States, 1954-1982," *Tax Notes.*

Vedder and Watel claim that the rich (those with AGI over $100,000) paid more taxes in 1982 than in 1981 in both relative and absolute terms because they responded to tax incentives.

<u>March 25, 1985</u>   Richard Vedder and Lowell Gallaway, "The Changing Burden of the Federal Individual Income Tax, 1981-1983," *Tax Notes*.

> Vedder and Gallaway conclude that upper-income taxpayers paid more taxes in both a relative and absolute sense in 1983 than in 1981. At the same time, the tax burden of lower-income taxpayers decreased. They claim that the 1981 tax cuts stimulated significant increases in "business entrepreneurship" as upper-income taxpayers responded to the incentives provided by lower tax rates.

<u>April 15, 1985</u>   Albert J. Davis, "Income Tax Shares and the Supply Side: A Comment on Vedder and Gallaway." *Tax Notes*.

> Davis notes that 1981 is an exceptional year in which high-income individuals shouldered less of the tax burden than in previous years; the share of taxes paid by the rich did not change very much when 1983 data are compared to 1979. Davis faults Vedder and Gallaway for considering the income of "millionaires," noting that this group accounted for only 0.01 percent of 1983 returns. Davis also notes that other factors such as economic changes and tax shelter activity should be taken into account when considering the changing tax burden. Finally, Davis points out that the share of after-tax income received by upper-income taxpayers increased from 1981 to 1983.

<u>June 10, 1985</u>   Richard Vedder and Lowell Gallaway, "Income Shares and the Supply Side: A Reply," *Tax Notes*.

> Vedder and Gallaway respond to the Davis article and argue that the choice of 1981 as the base year is proper because ERTA was enacted in that year. They also note that the tax share of the top percentile of returns increased after 1981 no matter which base year is used and despite the fact that conventional wisdom says that it should fall following tax cuts like those in ERTA.

<u>October 1985</u>   Lawrence B. Lindsey, "Taxpayer Behavior and the Distribution of the 1982 Tax Cut" (Cambridge, Mass: National Bureau of Economic Research), Working Paper No. 1760.

> Lindsey finds a significant behavioral response to the rate reductions of 1982. On average, about half of the revenue that would have been lost due to the rate reductions was recouped. Furthermore, the data suggest that for top-bracket taxpayers (the top 0.18 percent of tax returns) an actual increase in revenue occurred.

COMPARISON OF METHODOLOGY

Of all the studies of the distributional effects of ERTA, the methodology employed in Lawrence B. Lindsey's "Taxpayer Behavior and the Distribution of the 1982 Tax Cut" is most similar to the methodology used in this paper: both compare a static baseline to actual tax payments in order to evaluate the effects of ERTA on the level and distribution of tax payments. A few of the methodological differences between the two studies are described below.

Income Classification

Lindsey classifies taxpayers by adjusted gross income (AGI), though modified to retain a constant definition of AGI between years. In this paper, taxpayers are classified by expanded adjusted gross income (EAGI), which is a more comprehensive measure of income. (See Appendix B for the definition of EAGI).

Another important difference between the studies is the number of income groups into which the taxpayers are divided. Lindsey presents results for 14 groups, including three subdivisions of the top 5 percent of returns. The CBO study uses five income groupings, with the smallest group composed of the top percentile of returns. Lindsey observes different behavior for taxpayers in the top 0.18 percent of returns than for all other groups--only for this top group does he conclude that a behavioral response more than offsets the static effects of tax rate reductions in ERTA. CBO did not find that behavioral responses were larger than the static effects of the tax cuts, but this conclusion does not necessarily contradict Lindsey's results because the CBO did not investigate the behavior of taxpayers in groups smaller than the top percentile. The top percentile of returns includes taxpayers with a wide range of incomes who received different reductions in marginal and average tax rates as a result of ERTA. One would expect, therefore, that behavioral responses of taxpayers within this group would vary with income as Lindsey observes. As income groupings become smaller, however, the data become less reliable as the basis for drawing general conclusions about taxpayer behavior.

Creation of the Static Baseline

Though both papers develop a static baseline, they do so with different assumptions that affect both the level and distribution of baseline income and tax payments. The static baselines reflect assumptions about both the functional distribution of income (the distribution among types of income such as wages and salaries, dividends, rental income, etc.) and the distribution of income among income groups. Changes in the functional distribution cause changes in the distribution among taxpayers, since the distributions of each type of income among taxpayers differ (for example, dividends are more concentrated in upper-income groups than wage and salary income).

The Lindsey baseline reflects the effects of changes in the functional distribution of income on the distribution of income among taxpayers. This means that these effects are not attributed to tax changes in ERTA. In contrast, the CBO baseline holds both the functional and income-group distributions constant. This allows for the possibility that all distributional changes are induced by tax law changes in ERTA.

The baselines are created from the actual distribution of income in different years. Lindsey's baseline is developed from data in the 1979 *Statistics of Income*, which are aged to simulate the distribution of tax payments that would have occurred in 1982 if the 1982 tax cuts had not been enacted; the CBO baseline is developed from the distribution in 1980 and compared to the actual distribution in 1983.

To age the 1979 data to the 1982 baseline level, Lindsey uses the growth of different types of income as observed in nontax data sources, in this way adjusting the baseline for changes in the functional distribution of income between those years. In most cases, growth rates used are from the national income and product accounts (NIPA). Capital gains are not included in the NIPA definition of income; for capital gains, Lindsey substitutes actual 1980 capital gains realizations for realizations in 1979. This substitution is made under the assumption that 1979 capital gains realizations were higher than normal because of a temporary "unlocking" of gains in response to the reduction in the capital gains tax rate included in the Revenue Act of 1978. Lindsey argues that use of 1979 gains would make differences between the baseline and actual data artificially small--any behavioral response to the reduced rate on gains in ERTA would be understated.

Lindsey then indexes the 1980 gains to reflect changes in the price level. In comparison, the CBO baseline reflects 1980 capital gains grown at the rate of growth of nominal per capita personal income. Because nominal per capita personal income grew more rapidly than the price level between 1980 and 1983, the CBO baseline capital gains realizations will be closer to the actual value of capital gains than the Lindsey baseline amount of capital gains, that is, the behavioral response estimated using the CBO methodology would be smaller than that estimated using the Lindsey methodology (other things equal).

The Lindsey baseline reflects the assumption that each component of income (except for capital gain) would have grown as it actually did even if ERTA had not been passed. Capital gains in the baseline are increased by the growth rate of the CPI after 1980. The CBO baseline instead assumes that all income items (including capital gains) would have grown by the rate of growth of per capita personal income between 1980 and 1983, 21.9 percent, adjusted for 2.6 percent growth in the number of tax returns. This method embodies the as-

sumption that <u>aggregate</u> income would have grown as it did in the absence of ERTA. In other words, the assumption is that tax policy changes did not alter overall growth. This method of constructing the baseline leaves open the possibility that tax law changes affected the functional and income-group distributions of income as well as the ratio between the tax base and per capita personal income.

Table A.1 compares the growth rates between 1980 and 1983 of selected components of income per return, as would be used in the Lindsey methodology, to the growth of per capita personal income, used in this paper. Though the growth rates for many of the types of income differ considerably from the growth in per capita personal income, these items are a small share of total personal income. The largest component of income, wages and salaries, has a per-return growth rate that is fairly close to the growth rate of per capita personal income.

Bracket Creep

Lindsey applies pre-ERTA law to the baseline distribution of income to obtain the baseline level and distribution of tax payments. It appears, however, that he does not adjust the parameters of pre-ERTA law (for example, the personal exemption amount and tax bracket boundaries) for either nominal or real income growth. In this paper, 1980 tax law is indexed for nominal growth in per capita personal income in order to control for the effects of "bracket creep" on the level and distribution of tax payments. The baseline in this paper then holds average tax rates and income shares fixed at 1980 levels and assumes that income and deduction items per return would have grown at the same rate as per-capita personal income if tax policy had remained unchanged. Because his baseline is not indexed (other things equal), the level of Lindsey's baseline tax payments would be higher relative to actual tax payments than the CBO baseline level and his estimate of the static tax reduction greater. Further, with no indexation, the tax cut for lower-income taxpayers will appear relatively larger because the erosion in the value of the personal exemption and zero bracket amount has a larger relative effect on the tax payments of low-income taxpayers than on upper-income taxpayers.

Stacking Order of Static and Feedback Effects

In evaluating the effects of ERTA on taxes paid, both papers show the static effects of tax changes separately from the behavioral responses (or "feedback") to changes in the tax law. The papers differ, however, in the order of computation of static and feedback effects. Consider four distributions of taxes paid:

TABLE A.1.   RATES OF GROWTH OF COMPONENTS OF INCOME, FROM NATIONAL
              INCOME AND PRODUCT ACCOUNTS

	1980	1983	Share of Personal Income in 1983 (percents)	Growth (percents)	Growth per Return (percents)
Personal Income (In billions of dollars)	2,258.5	2,836.4		25.6	
Population (In thousands)	227,738	234,538		3.0	
Personal Income Per Capita (In dollars)	9,917	12,093		21.9	
Number of Tax Returns	93,902,469	96,321,310		2.6	
Consumer Price Index (1967 = 100)	246.8	298.4		20.9	

(In Billions of Dollars)

Wages and Salaries	1,372.0	1,675.8	59.1		19.1
Proprietors' Income					
Farm	20.5	14.3	0.5		-32.0
Nonfarm	160.1	178.0	6.3		8.4
Personal Interest	271.9	385.7	13.6		38.3
Personal Dividends	52.9	68.0	2.4		25.3
Rental Income	6.6	12.8	0.5		89.1

SOURCE: Economic Report of the President (February 1986).

(1)   the baseline distribution, which shows taxes paid when pre-ERTA law is applied to a pre-ERTA distribution of income that has been grown to post-ERTA levels.

(2)   the distribution of taxes paid when post-ERTA law is applied to the pre-ERTA distribution of income,

(3)   the distribution when pre-ERTA law is applied to the post-ERTA distribution of income, and

(4)   the actual post-ERTA distribution of taxes paid (post-ERTA law applied to the post-ERTA distribution of income.)

Both papers seek to explain the differences between distributions number (1) and (4) as the sum of static effects and feedback effects. Lindsey defines the static effects of the tax changes as the differences between distributions number (1) and (2), and the feedback effects as the differences between distributions number (2) and (4). CBO defines the static effects as the differences between distributions number (1) and (3), and the feedback effects as the differences between distributions number (3) and (4). Compared to the Lindsey methodology if it were applied to the CBO data, the CBO methodology would show a larger static tax cut and, therefore, a larger offsetting tax increase from feedback effects;   also, the CBO feedback effects would offset a larger proportion of the static tax cut. This occurs because CBO's feedback effects are computed at the higher pre-ERTA rates, while Lindsey computes feedback at the lower post-ERTA rates.

Stacking Order of Static Tax Changes

Both papers decompose the static effects of ERTA into those resulting from changes in the definition of the tax base and those resulting from changes in tax rates. However, the papers differ in the order in which these different effects are computed. Lindsey computes the effects of changes in the tax base first, computing them relative to pre-ERTA tax rates. Next, the effects of changes in rates are computed relative to the post-ERTA definition of the tax base. In this paper, the effects of rate changes are computed first, relative to the pre-ERTA tax base, and the effects of changes in the tax base are then computed relative to the reduced tax rates. This difference in methodology does not itself affect the estimate of the total static tax changes, but only the attribution of the effects of tax law changes to tax-base changes or rate changes. Compared to the CBO methodology (other things equal) the Lindsey methodology would attribute more of the total static effect to tax-base effects and less to tax-rate effects.

Interpretation of Results

CBO and Lindsey differ somewhat in the way they interpret differences between actual and baseline distributions of tax payments. Lindsey gives a stronger interpretation than does CBO; he attributes these differences to behavioral responses to ERTA. CBO also uses these differences as its measure of behavioral responses, but emphasizes that the distribution of income may have changed for reasons other than induced behavioral responses to changes in the tax law.

These other influences on the distribution include changes in economic conditions such as inflation, interest rates, and unemployment, changes in certain compliance provisions of the tax law, and deregulation of financial markets. CBO then applies available econometric evidence on behavioral responses to assess the likelihood that the differences are, in fact, attributable to behavioral responses (CBO's assessment of the evidence on behavioral responses to ERTA is presented in Chapter IV).

APPENDIX B

DEFINITION OF EXPANDED ADJUSTED GROSS INCOME

Expanded adjusted gross income (EAGI) is the income measure used to classify tax returns in this report. It is based on the more standard tax-oriented definition of income, adjusted gross income (AGI). AGI is equal to the sum of income items (such as wages and salaries, interest, dividends, capital gains, and business income) less "adjustments to income" (such as the deduction for two-earner married couples, contributions to IRAs and self-employed retirement plans, and some employee business expenses). Portions of interest, dividend, and capital gains income are (or have been in different years) excluded from AGI, making AGI a less complete measure of income. Between 1980 and 1983, the definition of AGI changed for the following reasons:

- *Changes in the portion of dividends and interest excluded from AGI.* In 1980 and 1982-1983, $100 ($200 for a joint return) of dividends could be excluded; in 1981, $200 ($400 for a joint return) of interest and dividends combined could be excluded. In 1982 and 1983, interest paid on "All Savers Certificates" was also excluded, with a lifetime limit of $1,000 ($2,000 for a joint return);

- *Expansion of limits and eligibility requirements for contributions to IRA and self-employed retirement plans.* In 1980, IRA deductions were limited to 15 percent of annual compensation up to $1,500 (plus $250 for a non-working spouse) and were restricted to individuals who did not participate in a qualified employer pension, stock bonus, or other retirement plan. For 1982 and after, the limits were $2,000 per employee (plus $250 for a nonworking spouse) or 100 percent of compensation, and eligibility was extended to participants in employer plans;

- *In 1980 and 1981, contributions to self-employment retirement plans* were limited to the lesser of $7,500 or 15 percent of net earnings from self-employment. In 1982 and later years, the deductible limit was increased to $15,000 or 15 percent of net earnings from self-employment;

- *Creation of the deduction for two-earner married couples.* In 1982, the deduction was 5 percent of the qualified earned income, up to $30,000, of the spouse with lower earnings; it was 10 percent for 1983 and later years.

Expanded AGI is defined as AGI plus the excluded portion of dividends (in 1980, 1982, and 1983) or the excluded portion of dividends and interest combined (in 1981), plus excluded interest paid on "All Savers Certificates" in 1982 and 1983, [1] plus the excluded portion of long-term capital gains in excess of short-term capital losses, plus the second-earner deduction (in 1982 and 1983), plus deductions for contributions to IRAs and self-employment retirement plans. Thus, the definition of EAGI is essentially constant for years 1980 to 1983.

EAGI is a more comprehensive measure of income than is AGI for two reasons: it includes income items that are excluded from AGI, and it does not exclude income used to make contributions to IRAs or self-employment retirement plans.

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1.   Though the "All Savers Certificates" were marketed in 1981 and 1982, the excluded interest was not reported until 1982 and 1983.

APPENDIX C

DERIVATION OF EQUATIONS IN CHAPTER II

Equation 2.4

Tax payments can be written as the product of the four terms on the right side of equation (2.3), repeated below. Equation (2.4) shows that the percentage growth of tax payments can be approximated by the sum of the growth rates of the four separate terms.

(2.3) Taxes = (Taxes/TY)*(TY/AGI)*(AGI/EAGI)*EAGI

(2.4) $\%\Delta$ in Taxes = $\%\Delta$ (Tax/TY) + $\%\Delta$ (TY/AGI) + $\%\Delta$ (AGI/EAGI) + $\%\Delta$ EAGI

where

Δ	=	Change
TY	=	Taxable Income
AGI	=	Adjusted Gross Income
EAGI	=	Expanded Adjusted Gross Income

The sum of the growth rates of separate terms in equation (2.4), or any variable that is expressed as a product of other variables, does not exactly sum to total growth because of omitted cross-product terms. This can be illustrated with an equation with two terms in the product.

Let A be the product of the two terms, B and C:

(C.1) A = B * C

Then a change in A equals a change in the product:

(C.2) Δ A $= \Delta(B * C)$,
$= B\Delta C + C\Delta B + \Delta B\Delta C$

where Δ = a change

The percentage change in A can be expressed as follows:

$$(C.3)\% \Delta A = \frac{\Delta A}{A} = \frac{B \Delta C + C \Delta B + \Delta B \Delta C}{B * C}$$

$$= \frac{\Delta C}{C} + \frac{\Delta B}{B} + \frac{\Delta B \Delta C}{BC}$$

$$= \% \Delta C + \% \Delta B + (\% \Delta B * \% \Delta C)$$

Clearly, the percentage change in A includes the cross-product term ($\% \Delta B * \% \Delta C$). However, this term becomes very small as the percentage changes in B and C become smaller. Thus, the percentage change in A can be approximated as the sum of the percentage changes in B and C.

Several cross product terms are omitted in equation (2.4) above. The cross-product terms are shown below in equation (C.4).

$$(C.4) \quad \% \Delta \text{Taxes} = (\% \Delta \text{Tax}/\text{TY}) + (\% \Delta \text{TY}/\text{AGI}) + (\% \Delta \text{AGI}/\text{EAGI}) + (\% \Delta \text{EAGI}) +$$

$$(\% \Delta \text{Tax}/\text{TY})*(\% \Delta \text{TY}/\text{AGI}) + (\% \Delta \text{Tax}/\text{TY})*$$
$$(\% \Delta \text{AGI}/\text{EAGI}) + \% \Delta (\text{TAX}/\text{TY})*(\% \Delta \text{EAGI}) +$$

$$(\% \Delta \text{TY}/\text{AGI})*(\% \Delta \text{AGI}/\text{EAGI}) + (\% \Delta \text{TY}/\text{AGI})*$$
$$(\% \Delta \text{EAGI}) + (\% \Delta \text{Tax}/\text{TY})*(\% \Delta \text{TY}/\text{AGI})*$$
$$(\% \Delta \text{AGI})*(\% \Delta \text{EAGI})$$

Equation (2.4) can be used as an approximation of equation (C.4) because the cross-product terms are very small compared to the other terms in the equation. This approximation is much more exact for small percentage changes in the separate terms than for large changes.

Equation 2.6

The derivation of equation (2.6) is shown below. First, equation (C.5) shows EAGI written as the sum of its components (only three of the components are shown here). Equation (C.6) shows that the change in EAGI between 1980 and 1983 can be written as the sum of the changes in the components of EAGI during these years. In equation (C.7), each side is divided by EAGI; equation (C.8) is written so that each term on the right is divided by EAGI. Equation (C.8) can be rewritten to show that the percentage growth of EAGI is equal to the weighted percentage growth rates of each of the components, shown in equation (C.9). Note that each term on the right side of equation (C.8) has been multiplied by one (for example wages/wages) so that the equality still

holds.   Rearranging terms gives the weighted growth rates shown in equation (2.6), repeated below.

(C.5) EAGI   = Wages + Interest + Dividends + ...

(C.6) Δ EAGI = Δ Wages + Δ Interest + Δ Dividends + ...

(C.7) $\dfrac{\Delta \text{ EAGI}}{\text{EAGI}}$ = $\dfrac{\Delta \text{Wages} + \Delta \text{ Interest} + \Delta \text{ Dividends} + ...}{\text{EAGI}}$

(C.8) $\dfrac{\Delta \text{ EAGI}}{\text{EAGI}}$ = $\dfrac{\Delta \text{Wages}}{\text{EAGI}}$ + $\dfrac{\Delta \text{ Interest}}{\text{EAGI}}$ + $\dfrac{\Delta \text{ Dividends}}{\text{EAGI}}$ + ...

(C.9) $\%\Delta$ EAGI = $\dfrac{\Delta \text{Wages}}{\text{Wages}} * \dfrac{\text{Wages}}{\text{EAGI}}$ + $\dfrac{\Delta \text{Interest}}{\text{Interest}} * \dfrac{\text{Interest}}{\text{EAGI}}$ + ...

(2.6) % EAGI = ((% Δ Wages)*(Wages/EAGI)) + ((%Δ Interest)*(Interest/EAGI)) + ...

APPENDIX D

CHANGES IN AGI/EAGI, TAXABLE INCOME/AGI,

AND TAXES/TAXABLE INCOME

Chapter II describes the most significant component of growth in income taxes between 1980 and 1983, which is growth in EAGI. This appendix describes the other components, which are changes in three ratios: AGI/EAGI, taxable income/AGI, and taxes/taxable income.

AGI/EAGI

As noted above, EAGI is derived from AGI by adding back those items of income reported on tax returns that are excluded or deducted in the computation of AGI. These items are excluded capital gains, excluded dividends, IRA and self-employment retirement plan deductions, and the deduction for two-earner married couples.

In total, the ratio of AGI to EAGI declined by 3.3 percent between 1980 and 1983, mostly because of liberalization of the IRA deduction and introduction of the two-earner deduction, but also because taxpayers realized more capital gains. Increased realization of capital gains increases the proportion of EAGI that is excluded from AGI because of the 60-percent capital gains exclusion.

The percentage change in AGI/EAGI can be expressed as the sum of each component's contribution to the difference between AGI and EAGI by the equation:

$$(1) \quad \% \, \Delta \, (\text{AGI/EAGI}) = - [\Delta(\text{EXCL1/EAGI})]/(\text{AGI/EAGI})$$
$$- [\Delta(\text{EXCL2/EAGI})]/(\text{AGI/EAGI})$$
$$- \quad \ldots\ldots$$

where EXCL1, EXCL2, ... are items in EAGI that are excluded or deducted in computing AGI.

Table D-1 shows the contribution of different exclusions to the change in the ratio of AGI to EAGI between 1980 and 1983. In total, the ratio declined by 3.3 percent--of this decline, 1.4 percentage points is attributable to increased use of IRA deductions, 1.0 percentage point to the second earner deduction, and 0.9 percentage points to increases in realizations of capital gains. The components that explain the change in this ratio differ substantially among income groups. For the top percentile, the ratio declined by the largest percentage-- 6.9 percent--and was mostly due to increased realization of capital gains (5.8 percentage points). For all other groups, IRA deductions were the most important factor, followed by the two-earner deduction.

TABLE D-1.   EXPLANATION OF PERCENTAGE CHANGE IN RATIO OF
              ADJUSTED GROSS INCOME (AGI) TO EXPANDED ADJUSTED
              GROSS INCOME (EAGI): 1980-1983 (In percent)

Contribution to Percentage Change in Ratio of AGI to EAGI	Total	Expanded Adjusted Gross Income Group				
		Group 1 (1%)	Group 2 (2-5%)	Group 3 (6-25%)	Group 4 (26-50%)	Group 5 (51-95%)
Total	-3.3	-6.9	-4.2	-3.4	-1.9	-0.8
IRA Deductions	-1.4	-0.8	-2.4	-1.8	-1.0	-0.4
Keogh Deductions	*	-0.1	*	*	*	*
2nd Earner Deduction	-1.0	-0.2	-1.3	-1.6	-0.8	-0.2
Excluded Capital Gains	-0.9	-5.8	-0.4	*	-0.1	-0.1
Excluded Dividend	*	*	*	*	*	*

NOTE: Separate items may not add up exactly to AGI because of rounding.

* Less than 0.05 percentage points.

(Taxable Income)/AGI

The ratio of taxable income to AGI depends on the level of personal exemptions and on the availability and use of itemized deductions, both relative to AGI. As shown above in Table II.3, Chapter II, the ratio of taxable income to AGI increased by 0.3 percent between 1980 and 1983. Thus, changes in this ratio had very little effect on changes in taxes paid. The ratio declined for the top three income groups, reflecting a decline in the size of the tax base relative to AGI, but increased for the bottom two income groups.

The two largest items that are deducted from AGI to compute taxable income are personal exemptions and, for itemizers, excess itemized deductions (total itemized deductions less the zero bracket amount). Thus, taxable income can be expressed approximately as:

(2) TY = AGI - EX - EID

where

TY   = taxable income
EX   = personal exemptions
and EID   = excess itemized deductions [1]

The percentage growth in the ratio of taxable income to AGI (TY/AGI) can be expressed as:

$$(3) \quad \% \, \Delta \, (TY/AGI) = - \, \%\Delta(EID/AGI) * (EID/TY)$$
$$- \, \%\Delta(EX/AGI) * (EX/TY) \, [2]$$

Table D-2 shows the relative contributions of excess itemized deductions and personal exemptions to the changes in the ratio of taxable income to AGI for the five income groups between 1980 and 1983. For all the income groups, excess itemized deductions increased by a larger percentage than did AGI, and thus contributed to a lower ratio of taxable income to AGI. The contribution of greater excess itemized deductions to the decline in (TY/AGI) was largest for groups 2 (4.4 percentage points) and 3 (3.4 percentage points) and smallest for group 5 (1.8 percentage points). In the bottom group, in particular, relatively few taxpayers are itemizers. Thus, part of the reason that tax payments increased relatively less for the middle-income groups than for others was because of the rapid growth in excess itemized deductions for these groups.

The growth of exemptions, on the other hand, tended to raise the ratio of taxable income to AGI because the ratio of exemptions to AGI declined. This occurred because the personal exemption amount was unchanged in ERTA and TEFRA, thereby permitting its real value to erode with inflation. This especially affected the lower-income groups, for which exemptions are a relatively large fraction of AGI. The decline in the ratio of personal exemptions to AGI raised the ratio of taxable income to AGI by 3.8 percentage points in group 5, but only by 0.8 percentage points in group 1 and 1.3 percentage points in group 2.

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1.   Nonitemizers are also allowed a deduction for charitable contributions.

2.   The derivation is similar to that described in Appendix C.

TABLE D-2.   EXPLANATION OF PERCENTAGE CHANGE IN RATIO OF
             TAXABLE INCOME (TY) TO ADJUSTED GROSS INCOME (AGI):
             1980-1983 (In percent)

Contribu-tion to Percentage Change in (TY/AGI)	Total	Expanded Adjusted Gross Income Group				
		Group 1 (1%)	Group 2 (2-5%)	Group 3 (6-25%)	Group 4 (26-50%)	Group 5 (51-95%)
Total	0.3	-1.7	-3.0	-1.1	1.0	2.3
Excess Itemized Deductions	-3.1	-2.6	-4.4	-3.4	-2.1	-1.8
Exemptions	2.6	0.8	1.3	2.3	3.1	3.8

Because of the relatively larger effects of exemptions, and smaller effects of excess itemized deductions in the lower-income groups, the ratio of taxable income to AGI increased for groups 4 and 5. The reverse occurred for groups 1-3; the ratio of taxable income to AGI declined because of the relatively greater importance of the increase in excess itemized deductions for these groups.

Table D-3 shows the contributions of different specific deductions to the growth in itemized deductions between 1980 and 1983. During this period, itemized deductions increased by 42 percent. The two most important contributors to that growth were interest deductions (20.0 percentage points) and deductions for state and local taxes (14.0 percentage points). Medical deductions, however, contributed 23.2 percentage points to the growth in itemized deductions for group 5, though very little (and in some cases negatively) to the growth in itemized deductions for other groups.[3]

For the top percentile, itemized deductions increased slightly more than for all returns—43.5 percent, compared to 42.0 percent. Thus, the increase in the tax share paid by the top percentile between 1980 and 1983 was not a result

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3.   One possible explanation is that actual medical expenses increased substantially for all groups, but that deductions either declined or increased only slightly in Groups 1-4 because TEFRA raised the floor on itemized deductions for medical expenses from 3 percent of AGI to 5 percent of AGI. This might not have significantly affected lower-income itemizers who claim the medical deductions, because their medical expenses may have been far in excess of either a 3-percent or 5-percent floor.

It is also worth noting that total itemized deductions increased by the greatest percentage in group 5—74.0 percent. This increase, however, had little effect on the ratio of taxable income to AGI for group 5 because excess itemized deductions are such a small share of AGI for that group.

TABLE D-3.   EXPLANATION OF PERCENTAGE CHANGE IN ITEMIZED
              DEDUCTIONS, 1980-1983

Contribution to Percentage Change in Itemized Deductions	Total	Expanded Adjusted Gross Income Group				
		Group 1 (1%)	Group 2 (2-5%)	Group 3 (6-25%)	Group 4 (26-50%)	Group 5 (51-95%)
Total	42.0	43.5	38.6	38.1	42.3	74.0
Medical Deductions	1.4	-0.4	-1.0	-0.9	2.8	23.2
Interest Deductions	20.0	20.2	21.8	18.9	18.6	25.2
Taxes-Paid Deduction	14.0	14.1	12.3	14.5	13.9	15.6
Contributions Deduction	5.4	7.6	4.0	4.7	6.1	8.6

of a decline in the use of these deductions. The contribution of most of the individual deductions to the total growth in deductions was roughly the same for the top group as for other groups. Charitable deductions contributed more to the growth of itemized deductions for the top percentile than for the tax-paying population as a whole--7.6 percentage points, compared to 5.4 percentage points. This occurred because charitable contributions in 1980 were a relatively greater share of total deductions for the top group than for all tax-payers--20.9 percent compared to 11.8 percent. This resulted in a greater contribution of charitable deductions to the growth of itemized deductions in the top group, even though charitable deductions increased relatively less for the top group--by 36.2 percent, compared to a 46.0 percent increase for all tax-

payers. Thus, the data are consistent with the expectation that charitable contributions of the highest group might grow relatively more slowly if marginal tax rates were reduced.[4]

Taxes/(Taxable Income)

The ratio of taxes paid to taxable income measures the average tax rate. The average tax rate can change because of changes in marginal tax rates, tax credits, or minimum and maximum taxes, and also because of increases in income that move taxpayers into higher tax brackets. As seen in Table D.4, average tax rates declined between 1980 and 1983 by 9.3 percent, mostly because of the reduction in marginal rates in ERTA. Group 1 had a slightly smaller than average decline in the average tax rate (9.1 percent).

Table D-4 provides more detail on changes in taxable income, taxes paid, and the average tax rate between 1980 and 1983. While the ratio of taxes to taxable income declined by between 9 percent and 10 percent for all income groups over that period, the year-by-year pattern was very uneven. For the entire population, the average tax rate increased by 3 percent between 1980 and 1981, reflecting bracket creep in excess of the first stage of the ERTA rate cut, but then declined by slightly over 6 percent in 1982 and almost 6 percent more in 1983. For the top group, the tax rate increased by less than 1 percent in 1981, then declined by almost 8 percent in 1982 (when the top rate was lowered to 50 percent) and another 2 percent in 1983.

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4. Many studies have shown that charitable deductions are higher at higher marginal tax rates, and that the effect of marginal tax rates on giving is especially larger for higher-income returns. For examples, see Gerald Auten and Gabriel Rudney, "Charitable Deductions and Tax Reform: New Evidence on Giving Behavior," in *Proceedings of the Annual Conference of the National Tax Association* (1984), pp. 73-81; Charles Clotfelter, *Federal Tax Policy and Charitable Giving*, National Bureau of Economic Research Monograph (Chicago: University of Chicago Press, 1985); and Charles Clotfelter and Eugene Steuerle, "Charitable Contributions" in Henry Aaron and Joseph Pechman, eds., *How Taxes Affect Economic Behavior* (Washington, D.C.: The Brookings Institution, 1981). For a recent simulation analysis of how tax reform might affect charitable giving that is based on these and other econometric results, see Lawrence B. Lindsey, "The Effect of the President's Tax Reform Proposal on Charitable Giving," *National Tax Journal*, vol. xxxix (March 1986), pp. 1-12. For a critique of these studies, see Bruce Davie, "Tax Rate Changes and Charitable Contributions," *Tax Notes* (March 11, 1985).

TABLE D-4.   ANNUAL GROWTH OF TAX/TAXABLE INCOME: 1980-1983
             (In percent)

	Total	Expanded Adjusted Gross Income Group				
		Group 1 (1%)	Group 2 (2-5%)	Group 3 (6-25%)	Group 4 (26-50%)	Group 5 (51-95%)
Total Income Tax						
1980-1981	13.5	3.7	11.0	16.0	15.9	26.8
1981-1982	-2.3	7.3	-3.3	-4.4	-3.1	-9.8
1982-1983	-1.2	6.4	-1.9	-3.0	-3.9	-3.3
1980-1983	9.5	18.5	5.3	7.6	7.9	10.6
Taxable Income						
1980-1981	10.2	3.4	6.9	10.2	10.9	15.6
1981-1982	4.4	16.1	3.6	3.5	4.5	1.2
1982-1983	4.9	8.6	5.5	4.5	4.2	4.1
1980-1983	20.7	30.3	16.8	19.2	20.7	21.8
Tax/Taxable Income						
1980-1981	3.0	0.3	3.8	5.3	4.5	9.7
1981-1982	-6.4	-7.5	-6.6	-7.6	-7.3	-10.9
1982-1983	-5.8	-2.0	-7.0	-7.2	-7.8	-7.1
1980-1983	-9.3	-9.1	-9.8	-9.8	-10.6	-9.2

APPENDIX E

THE GINI COEFFICIENT AND THE SUITS INDEX

The Gini coefficient is a commonly used measure of the equality of the distribution of income. The calculation of the coefficient is based upon the Lorenz curve, which graphs the cumulative proportion of income against the cumulative proportion of the population.[1] Figure 1 shows a Lorenz curve. The Gini coefficient is measured by dividing the area bounded by the 45 degree line and the Lorenz curve (Area A in the diagram), by the area of the triangle underneath the 45 degree line (Area A plus Area B). The coefficient thus ranges from 0 when income is equally distributed (each proportion of the population receives an equivalent proportion of income) to 1 at perfect inequality (all income is received by the wealthiest household). The greater the distributional inequality, the higher the Gini coefficient.

A Gini coefficient can be calculated for the distributions of both pretax income and after-tax income. The difference between the pretax and after-tax Gini coefficients is one measure of the degree to which a tax system is progressive (i.e., shifts the distribution of income in favor of members of the population with lower incomes.)[2] The larger the absolute difference between the after-tax and pretax Gini coefficients, the more redistributive is the tax system.

A measure of the equality of the distribution of tax payments can be constructed that is related to the Lorenz curve. For this measure, called the Suits

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1. For more information see Donald Kiefer, "Progressivity of the Federal, Individual Income Tax and Social Security Tax: 1974, 1980, 1981, and 1982," Congressional Research Service Report No. 84-134E (August 23, 1984).

2. This measure is referred to as the Reynolds-Smolensky Index of distributional progressivity. See Donald W. Kiefer, "Distributional Tax Progressivity Indexes," *National Tax Journal* volume xxxvii (December 1984), p. 498.

index, a tax concentration curve (analogous to the Lorenz curve) is plotted, showing the accumulated percentage of total income plotted against the accumulated percentage of the total tax burden. Figure 2 shows such a tax concentration curve. The Suits index is the area between the 45 degree line and the concentration curve as a fraction of the total area under the concentration curve (again, area A over the sum of area A and B).[3] If the tax is proportional, this index has a value of 0. If the total tax burden in paid by those in the highest income bracket, the index has a value of 1. Thus, the more progressive the tax, the higher the Suits index.

Lorenz Curve   Tax Concentration Curve

Percent of Income   Percent of Tax Payments
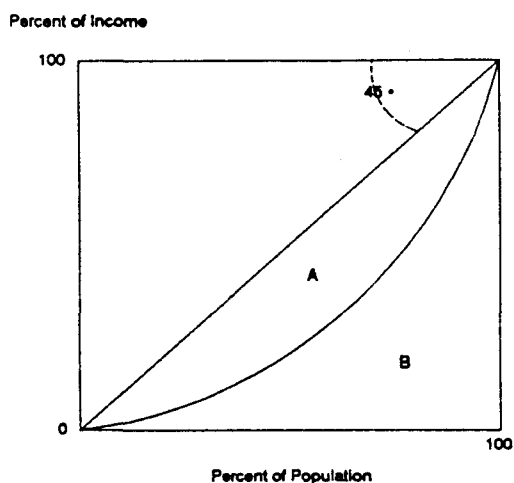
Percent of Population   Percent of Income

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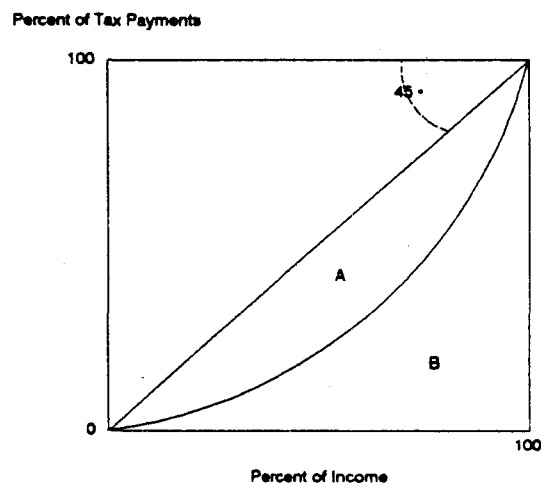
3. This index is referred to as the Suits index, and is described in Daniel B. Suits, "Measurement of Tax Progressivity," *American Economic Review*, vol. 67, no. 4 (September 1977), pp. 747-752.

APPENDIX F

THE CBO CAPITAL GAINS EQUATION

The CBO capital gains equation is a slightly modified version of an equation estimated in a study of capital gains by the U.S. Department of the Treasury.[1] The CBO equation is:

$$\text{(F.1)} \quad \text{RCG} = -10.68 + 0.82^*\text{RLINC} + 1.23^*\text{PRICE} + 0.62^*\text{RLSTKS}$$
$$\quad\quad\quad (1.51) \quad (1.81) \quad\quad (4.36) \quad\quad\quad (3.60)$$

$$+ 2.37^*\text{ATR}_t - 1.40^*\text{ATR}_{t-1}$$
$$(1.82) \quad\quad\quad (0.95)$$

(t statistics are in parenthesis)

$R^2 = 0.979$ D.W. $= 1.611$ F $= 225.854$
Period of Estimation: 1954-1983

In Equation (F.1), RCG = realized capital gains (net long-term gains in excess of net short-term losses plus net short-term gains for returns with positive net gains); RLINC = personal income divided by the GNP deflator; PRICE = the price level, measured by the GNP deflator; RLSTKS = the end of year value of corporate shares held by individuals divided by the GNP deflator; ATR_t = the after-tax proceeds from capital gains realizations, defined as 1 minus the average marginal tax rate on capital gains; and ATR_{t-1} = the after-tax proceeds from capital gains realizations, lagged one year. All variables are in logarithms.

The average marginal tax rate variable is constructed by taking a weighted average of marginal tax rates on capital gains confronted by a taxpayer with

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1. See U.S. Department of the Treasury, Office of the Secretary of the Treasury, Office of Tax Analysis, *Report to Congress on the Capital Gains Tax Reductions of 1978* (September 1985), pp. 175-177.

the average level of taxable income in each of six AGI classes: AGI less than $50,000, AGI between $50,000 and $100,000; AGI between $100,000 and $200,000; AGI between $200,000 and $500,000; AGI between $500,000 and $1,000,000, and AGI greater than $1,000,000. The weights are the amount of net long-term capital gains in each income class in 1983. For years other than 1983, the same weights are used but the taxable income of the representative taxpayer in each group is computed by multiplying 1983 taxable income by the ratio of personal income in that year to personal income in 1983. The marginal tax rate on gains is then calculated for a taxpayer at that level of income.[2]

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2. The Treasury, in contrast, constructs a marginal tax rate variable for taxpayers with income over $200,000 in 1982 dollars. The weighted average marginal tax rate used in the CBO regression is between 5 and 15 percentage points lower than the "maximum" marginal tax rate used in the Treasury regression. It has more year-to-year variation than the Treasury measure because it takes account of changes in marginal tax rates for taxpayers below the top rate bracket and because taxpayers below the top income groups were not significantly affected by some provisions (such as the add-on minimum tax) that raised capital gains rates for upper-income groups in the 1970s.