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JOINT COMMITTEE PRINT

IMPACT OF THE 1981 PERSONAL INCOME TAX REDUCTIONS ON INCOME DISTRIBUTION

A STUDY

PREPARED FOR THE USE OF THE

JOINT ECONOMIC COMMITTEE

CONGRESS OF THE UNITED STATES

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LETTERS OF TRANSMITTAL

December 23, 1981

To the Members of the Joint Economic Committee:

I am pleased to transmit a study entitled "Impact of the 1981 Personal Income Tax Reductions on Income Distribution."

The Economic Recovery Tax Act of 1981 made major changes in the structure of the personal income tax, including: rate reductions of 5 percent on October 1, 1981, 10 percent on July 1, 1982 and July 1, 1983; a reduction of the maximum marginal rate from 70 percent to 50 percent on unearned income, effective in 1982; and the introduction of indexing of tax brackets and the personal exemption for inflation, beginning in 1985. There was a considerable amount of debate and analysis last year on the impacts of the Act on the distribution of income. All of these analyses were somewhat deficient in that they were relatively short term in nature, and that they failed to take into account likely developments in the economy over the next few years.

This study takes a long-run view, through 1990, and it also is integrated with the probable course of the economy as predicted by the Data Resources, Inc. (DRI) model. It shows clearly that the tax cuts presented by President Reagan and passed by Congress are tilted in favor of the top 10 percent of the income distribution, especially toward the top 5 percent. The cuts for the bottom 50 percent disappear, and those for the next 40 percent are nominal. The results confirm the fact that supply-side economics is indeed trickle-down economics.

The study was prepared for the Joint Economic Committee by Valerie Amerkhail, utilizing the DRI model. Ms. Amerkhail has previously been associated with the Congressional Research Service of the Library of Congress, Evans Economics, and Chase Econometrics.

It should be understood that the views expressed in this study are exclusively those of the author and do not necessarily represent those of the Joint Economic Committee or of individual Members.

Sincerely,

Henry S. Reuss
Chairman, Joint Economic Committee

December 23, 1981

Honorable Henry S. Reuss Chairman, Joint Economic Committee Congress of the United States, Washington, D.C.

Dear Mr. Chairman:

I am pleased to transmit a study entitled "Impact of the 1981 Personal Income Tax Reductions on Income Distribution."

This study was prepared for the Joint Economic Committee by Valerie Amerkhail, utilizing the Data Resources, Inc. (DRI) model.

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James K. Galbraith
Executive Director, Joint Economic Committee

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INTRODUCTION
by
CHAIRMAN HENRY S. REUSS

Last year Congress enacted the Economic Recovery Tax Act of 1981 after much debate. One of the major issues concerned the implications for income distribution of the personal income tax reductions. In his July 27, 1981, speech President Reagan presented dramatic charts, indicating that there would allegedly be a major tax cut over the next five years for a family with an income of $20,000.

This study is the first analysis of the tax cut which takes a long-run view, through 1990, and, by utilizing the Data Resources, Inc. (DRI) model, it takes into account dynamic developments in the economy as a whole over the next decade. It also contains projections for the entire income distribution, not for just a few "typical" taxpayers.

Tax provisions analyzed include: rate reductions of 5 percent on October 1, 1981, 10 percent on July 1, 1982, and July 1, 1983; a reduction of the maximum marginal rate from 70 percent to 50 percent on unearned income, effective in 1982; and, the introduction of indexing of tax brackets and the personal exemption for inflation, beginning in 1985. The results of this study, summarized in Tables 1-3, clearly confirm that the 1981 tax cuts are tilted in favor of the top 10 percent of the income

distribution, especially toward the top 5 percent. For this most affluent group, those with adjusted gross income (AGI) over $55,850 on joint returns in 1980: their average tax rate falls by 5.5 percentage points between 1980 and 1990; their share of taxes paid falls by 4.5 percentage points between 1980 and 1990; and their average tax cut exceeds by more than $9,000 the reduction necessary to offset bracket creep between 1980 and 1990. The second 5 percent (1980 AGI of $44,540 to $55,850) also comes out ahead: an average rate drop of nearly 2 percentage points over the decade; a slight fall in their share of taxes paid; and, a tax cut $2,000 more than needed to offset bracket creep. For the next 40 percent: their average tax amounts and rates are essentially unchanged, though their share of taxes increases by more than 3 percentage points. The bottom 50 percent fares the worst of all: taxes, average tax rates, and their share of taxes all rise over the next decade. Thus for this lowest group (1980 joint AGI under $22,610) the supposedly dramatic tax cuts turn out to be a tax increase! In short, David Stockman's views are confirmed -- supply-side economics is trickle-down economics.

It should be pointed out that this study does not take into account a number of provisions aiding high income recipients primarily, such as the virtual elimination of the estate tax, the jump in the exemption for Americans living abroad, and the benefits from the probable increased rate of capital gains

realization, thus these results understate the shift in income distribution toward the affluent due to last year's tax act.

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Introduction

Attempts to study quantitatively the relationship between economic policy and the distribution of personal income are always hampered by shortcomings in the available data on income distribution. These shortcomings are especially severe when tax policy is concerned, because the only original source for tax information is the actual tax return, which is not designed to record the kind of data needed for economic analysis.

Longstanding projects at the Treasury Department and The Brookings Institution have produced "merge" files, by matching information from individual tax returns with demographic and economic information from other sources to create data cells with both kinds of information. These individual data cells are treated as though they represented actual taxpaying and income earning units. This approach promises to allow very detailed and accurate analysis of the relationship between tax rates and economic behavior. However, the process of constructing merge files is very time consuming and expensive. The resulting databases are likely to be somewhat out of date by the time they are ready for use, and would be even more difficult and costly to update and project into the future.

Because of present limitations on the usefulness and availability of merge files, most estimates of the impact of tax policy on income distribution have been made using models

constructed solely from the information on income tax returns. The best known of these tax return based models, the Treasury Department's Individual Income Tax Simulation Model, is briefly described in this report. It was developed primarily for use in revenue estimation, as were most tax models. The wealth of precise tax return detail in the Treasury model makes it a very accurate tool for measuring revenue in years for which economic conditions are known or can be accurately assumed, and which are not too far distant from the base year. However, presently available procedures for projecting it beyond the base year are cumbersome and highly judgmental. Probably for this reason, the Treasury does not use its tax model for revenue estimates beyond one year.

A completely different approach to modeling the relationship between tax policy and income distribution was used in a new model developed by Data Resources, Inc. (DRI). In this model the projected income distribution before tax is determined by the historical relationship between income distribution and macroeconomic variables which are forecast in the DRI econometric model of the U.S. economy.

The methodology, and the use of only published data, in this model precludes inclusion of very much tax return detail. For that reason, near-term estimates, particularly for changes in minor details of the tax code, could not approach the accuracy of the Treasury model. On the other hand, the ease and clarity with which the DRI model can be projected into the future under

different economic assumptions suggests that it could be a useful tool for forecasting the long-term revenue and distribution effects of alternative tax policies.

At the time this project was begun, there was no documentation available on the DRI tax model, but it was described as being one of an assortment of demographic/economic models intended primarily to assist the process of forecasting detailed categories of consumer spending.

Therefore, the first stage of this project attempted to discover precisely how the model worked, how it differs from other tax models, and what kinds of questions it might help to answer. It was also considered useful to provide some background discussion of alternative definitions of personal income and the definitional and other limitations of the available data.

Definitions of Individual Income

The national income account (NIA) definition of personal income would generally be the preferred concept for measuring and comparing income distribution because, except in the treatment of capital gains, it represents the most comprehensive attempt to measure the income received by persons. However, the broadest concept readily available from income tax returns is adjusted gross income (AGI). AGI excludes such nontaxable income as veterans and welfare benefits, employer contributions to pension and health plans, interest on tax free bonds, and part of

dividend payments, all of which are received disproportionately by particular income classes. Personal receipts which are included in NIA personal income but excluded from AGI were about 11 percent of personal income in 1948, 13 percent in 1958 and 1968, and had risen to 18 percent by 1978. On the other hand, because the national income accounts measure economic rather than purely financial transactions, NIA personal income excludes all capital gains, while AGI at least includes all net short-term gains and the part (currently 40 percent) of net long-term gains which is taxed as ordinary income. The importance of capital gains as a component of income varies with economic conditions, but is always greater for higher income classes. For instance, in 1977 net capital gains (not just the portion included in AGI) represented 2 percent or less of most income classes below $25,000, but averaged 17 percent of AGI above $100,000.

Expanded income, a somewhat broader concept than AGI, can be calculated from actual tax returns by adding to AGI the excluded portions of dividends and capital gains, and subtracting any investment interest (defined as any interest deduction other than for a home mortgage) that does not exceed the investment income reported on the same return. Because these adjustments are significant only for very high income classes, AGI in 1977 was 99 percent of expanded income for all expanded income under $200,000, 86 percent for expanded income between $200,000 and $500,000, 77 percent for $500,000 to $1 million, and 65 percent for expanded incomes over $1 million.

Most distributional studies using tax models based on actual individual returns have used the expanded income concept in presenting the results. There was some discussion with DRI on the possibility of adjusting their results to the expanded income concept, but any additional relevance gained would appear to be more than offset by a deterioration in accuracy. In the first place, published data on expanded income by income class are available only for the classes shown above. Secondly, capital gains are not presently forecast in the DRI macro model or explicitly treated in the tax model, for the very good reason that any such effort would have a much greater range of error than would be tolerable.

Treatment of Social Security Benefits and Payments

Under national income account definitions, social security benefits are included in personal income, and contributions by both employers and employees are excluded to avoid double counting. Under the Federal income tax system, social security benefits are not taxed, and wages, salaries, and income from noncorporate business are taxed before deductions of employee and self-employed contributions to social insurance. This difference in treatment means that in the aggregate the social security component of personal income exceeds the social security component of AGI by the amount that total benefits exceed employee and self-employed contributions. In the aggregate this discrepancy would be equal to employer contributions if the

system were exactly in balance each year. The income distribution implications are more serious, because in any given year the distribution of benefits will be quite different from the distribution of contributions.

Income Coverage Under Different Concepts

Another limitation of tax return based income data is the fact that it obviously does not include the income of those who do not file returns. In the absence of any real information on the distribution of income in the "underground economy" it is reasonable to ignore those who should file returns but choose not to. The necessity of also ignoring those who are not legally required to file tax returns because their income is too low means that tax return based measures of income distribution will seriously understate the number of people who belong in the lower tail of the distribution. The degree of this understatement will not be constant from year to year, because it depends on both the tax code and economic conditions. Therefore, great care should be taken in drawing any conclusions about changes in the lowest portion of the income distribution as measured in tax return based data.

The Treasury Individual Income Tax Simulation Model

Income tax revenue estimates by the Treasury Department, the Joint Committee on Taxation, and the Congressional Budget Office are all made with the Treasury's income tax model, which is based on a sample of actual tax returns for one year.

The current version uses a stratified random sample of 74,762 returns filed for the calendar year 1977, and weighted to represent all returns for that year. This sample was extrapolated to 1981 by a combination of judgmentally chosen targets and computerized solution procedures. The 23 aggregate items targeted included the components of AGI by ten income size classes and five functional categories (wages and salaries, dividends, interest, capital gains, and pensions), the number of returns filed by four types, number of exemptions (with taxpayer and dependent exemptions targeted separately from aged and blind), and the total dollar amounts for the earned income credit and the investment tax credit. These targets are described as being consistent with the short-range economic assumptions underlying the Federal Budget for FY 1982, and as having been developed mainly by time series techniques "including regressions of 'statistics of income' data against national income accounts."

In the first stage of extrapolation the sample was reweighted to provide the desired total of returns in each filing status (joint, single, separate and surviving spouse, head of household) and every dollar amount in each return was scaled up by the

factor needed to increase total AGI to the desired amount. Then, five types of deductions (medical, tax, charitable, interest, and other expenses) were scaled up again, each by an individual constant factor. The calculation of 1981 taxes owed for each return in the sample includes an imputation of itemized deductions to those taxpayers who used the standard deduction in 1977 but might be expected to switch to itemized deductions in 1981 with no change in the law. . . .

In the second stage of the extrapolation the Gauss-Newton solution procedure was used to adjust sample weights until the model converged on all 23 targets. The reweighted sample is then assumed to represent the population of taxpayers in 1981. The revenue and income distribution effects of alternative tax policies can then be tested by recalculating taxes owed for each return under different tax code assumptions.

The CRS Tax Calculator

The Congressional Research Service "Tax Calculator" uses published data from the Statistics of Income "Individual Income Tax Returns" to construct hypothetical returns for typical taxpayers. The model can be used to calculate taxes owed by these typical taxpayers under alternative tax codes. With incomes inflated at some chosen rate, it can measure the inflation-induced portion of bracket creep. However, it does not attempt to deal with the entire income distribution, or to relate changes in income to changes in economic conditions. Those

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functions would be performed by a second model now being developed in CRS. The new model will probably use a methodology similar to the DRI methodology, but with a greater emphasis on trying to project the types of income which are treated differently by the tax system. It is not likely to ever be linked directly to a macro model.

The DRI Tax Model

The database for the DRI tax model consists of 11 years (1968-1978) of data published in the IRS Statistics of Income "Individual Income Tax Returns," including the number of returns and income reported within 12 fixed income classes. A displaced lognormal function combined with a Pareto function for the upper tail is fit to the distribution of Adjusted Gross Income (AGI) reported on joint and single returns for each year.

It is this combined function, chosen because it can be precisely fit to the kind of skewed data typical of income distributions, which is forecast. 1/ Both total AGI (the area under the curve) and the distribution of AGI (the shape of the curve) are forecast as functions of macroeconomic variables in the DRI macro model. The area and shape of the forecast curve establishes the number of returns and mean income for each of the 12 income classes and each type of return. For each of these classes, the percentage of returns taking the standard deduction, the average deduction for those itemizing, and the average number of exemptions, are forecast as functions of specific tax policy and macro variables. With average taxable income in each income class calculated by taking average deductions and exemptions out of average AGI the model calculates average taxes owed from the specific marginal rates and marginal income brackets assumed and multiplies by the previously determined number of returns to get total taxes owed and after-tax income for each income class.

1/ A technical explanation of the use of the displaced lognormal distribution in an income distribution model is contained in: Charles E. Metcalf. An Econometric Model of the Income Distribution. Chicago: Markham, 1972. 176 p. (Institute for Research on Poverty Monograph Series)

As noted above, the DRI tax model analyzes joint and single tax returns separately. The other filing categories, married filing separately, and heads of households, are not presently included in the model. DRI foresees no significant problems in applying the same methodology to these types of returns. However, joint and single returns account for approximately 91 percent of all income reported on tax returns. There would appear to be some danger that the two other categories may be small enough and atypical enough to cause problems. Especially for that reason, DRI has not been encouraged to start work on this expansion until the more important process of documentation and testing has been completed.

Use of the macro model to forecast the economic assumptions assures that they will be internally consistent over time, which makes it possible to push the forecast out to distant years with much more confidence than when they are set judgmentally outside of the model framework. It also makes it much easier to determine the effects of alternative economic conditions on the income distribution results.

Ideally, use of the macro model would mean that different macroeconomic effects of alternative tax policies would show up as differences in the forecast of before-tax income. Some of the necessary links from macroeconomic policy to before-tax income distribution are provided by the fact that the relative shares of income from different sources, and macro variables such as the unemployment rate, influence the shape of the forecast income

curve. In support of this project, DRI has been working to expand and test the tax model's responsiveness to changes in the relative importance of different sources of income, but has not yet shown any results.

The link that cannot be established at this time is the one from distribution to the level of macro variables. A fully dynamic analysis would allow for the likelihood that changes in the distribution of personal income would affect the level and allocation of personal consumption expenditures, and possibly the level and pattern of labor force participation, even if total personal income were unchanged. However, the income variables in the macro model are the traditional national income account variables, with no explicit income class details, so changes in income distribution can have no effect on macroeconomic conditions as forecast by the model as long as the totals for personal income by type remain the same. Therefore, rate cuts which are targeted at different groups, but which reduce aggregate personal taxes by the same amount, would not affect the macro forecast differently. For this reason, the DRI tax model would not yet be an appropriate tool with which to test the hypothesis that different allocations of the same size personal tax cut would have different macroeconomic effects.

The approach used in the DRI tax model appears to be very promising for medium- and long-term projections of the income distribution effects of alternative tax policies. If, eventually, the tax model is completely linked to a macro model,

so that the dynamic interactions between the distribution of disposable income and the macro economy are fully captured, it will be an especially useful addition to the available tools for tax policy analysis. As presently available, however, it falls somewhere between the completely static analysis provided by the Treasury tax model and the fully dynamic analysis it could provide if the link with the macro model went both ways.

A partially dynamic analysis can be useful, but should be undertaken with great care, because it runs the risk of appearing to be more complete than it actually is. In particular, until the sensitivity of the tax model to differences in the sources of income has been fully tested, it should not be used to analyze changes in business taxes or in the total volume of personal taxes. Also, the absence of nontaxable transfer payments from the measured income distribution would severely limit the usefulness of comparisons of tax policies with different ratios of Federal receipts to expenditures even if the two models were completely interactive.

At the beginning of November, when the second stage of this project was begun, the DRI tax model could be used only to look at the distribution of before-tax AGI, at the local estimated tax paid on joint and single returns, or at the taxes paid at the medians of each of 12 unchanging nominal income classes. Because these predetermined income classes were fixed, they would include different proportions of the population in different years, or even in the same forecast year if different macroeconomic

assumptions were used. With this limitation the model could not be used to measure changes in the relative shares of the tax burden, or the after-tax income distribution.

Therefore, the second stage of the project included the development of procedures to fit a curve to the after-tax distribution which would allow direct comparisons of the before- and after-tax distributions, and calculation of average effective tax rates for specified portions of the distribution.

APPLICATION OF THE DRI TAX MODEL

The DRI tax model explicitly uses the marginal tax rates, dollar bracket amounts, standard deduction and personal exemption specified in the tax code. It can also be directly adjusted to account for certain general assumptions about the treatment of itemized deductions such as an across-the-board reduction of a given percent. When the model is used to analyze the effects of changes in such general aspects of the tax code the estimates are dynamic in the sense that the changed tax code is applied to a before-tax income distribution which has been determined by the macro model's estimate of the aggregate economic impact of the tax burden which will be felt after the change in the tax code. Thus, if significant "supply side" effects were to be expected from general changes in the tax code they would have appeared in the historical relationships on which the macro model is based, and would then have automatically passed through the tax model's estimates.

Changes in the tax code which are not large in relation to the total tax system, but which have a major impact on a very small portion of the taxpaying population are more problematic. If such changes are large enough to affect the economic behavior of the people involved, and if those people tend to be concentrated in a particular part of the income distribution, it

would be misleading to include assumptions about the static effect of the tax changes without also introducing assumptions about the dynamic effect of the behavioral changes.

For instance, the Economic Recovery Tax Act of 1981 introduces a deduction for part of the earnings of the "secondary earner" with a joint return reporting earned income for both husband and wife. This "marriage penalty" offset is proportional to the lesser earner's wage or salary income, as long as that income is below the cap of $30,000. It would be possible to make assumptions about the percentage of secondary earners at different income levels and their average contribution to AGI. This would allow the calculation of the distribution of the benefits from the marriage penalty offset under the assumption that the significant reduction in the marginal tax rate on the earnings of secondary workers (with earnings below $30,000) would have no effect on their work effort. However, several studies have found that married women whose husbands are present and in the labor force do respond positively and elastically to increases in their after tax earnings rate. This finding suggests that the people eligible for the marriage penalty deduction may increase their earnings, perhaps enough that their share of taxes paid would not be reduced even though their average tax rate is.

Another example is the reduction in the maximum tax rate for capital gains. The timing of the realization of capital gains is much more discretionary than the realization of most forms of

income. The last reduction in the maximum rate on capital gains is believed to have stimulated enough additional realizations to have increased total taxes paid on capital gains over what would have been collected otherwise. At least in the short term, the same result may be expected again, in which case the lower average tax rate for those who derive a significant portion of their income from capital gains would not necessarily mean a lower share of total taxes paid.

To analyze changes in the treatment of specific deductions it would be necessary to change the model's estimates of average itemized deductions for different income levels. This adjustment would be quite straightforward for those categories of deductions for which the Statistics of Income reports total use by income size. However, if major changes in the treatment of important deductions were assumed it would be necessary to base the macro forecast used by the tax model on estimates of the effects of the change on the affected sectors of the macro economy. For instance, reducing the deductions for State and local taxes would be expected to increase pressure on the State and local sector to hold down or lower their tax rates, which might reduce their spending, and in turn, lower personal income and employment.

The structure of the DRI tax model includes only a minimal attempt to take into account the extent to which income from different sources, or from different sectors of the economy, is received by different parts of the income distribution. Therefore, any analysis of the effect of changes in the tax code

which might be expected to have different effects on particular sectors of the economy or particular sources of income would not be completely dynamic even if adjustments were made to the macro forecast.

Because of the newness and lack of complete tests of the sensitivity of the tax model to different economic assumptions, the analysis in this project was confined to the measurement of the changes over time in average tax rates and shares of taxes paid by different segments of the income distribution as a result of the tax code which became law with the passage of the Economic Recovery Act of 1981. The explicit provisions of the Act which were considered are listed below. As the discussion in the previous section suggests, the results could be somewhat different if such provisions as the marriage penalty offset had been included, but in that case the results would be far more dependent on exogenous assumptions.

Provisions of the Economic Recovery Tax Act of 1981

* Across-the-board reductions in tax rates, effective October 1, 1981, July 1, 1982, and July 1, 1983, which lower annual tax rates (on average) by 1.25 percent for 1981, 10 percent for 1982, 19 percent for 1983, and 23 percent for 1984 and beyond. The 1.25 percent reduction in 1981 is actually achieved by a 1.25 percent tax credit, the other reductions by specific changes in marginal rates and bracket amounts.

* Beginning in 1985, the personal exemption, the zero bracket amount, and the maximum and minimum dollar amounts for each marginal tax bracket are indexed to the consumer price index (CPI). The indexing factor for each tax year is determined by the increase in the average CPI from the 12-month period beginning September 30 of the calendar year two years before the tax year to the average for the 12-month period ending September 30 one year before the tax year.

* Beginning in 1982, the maximum marginal tax rate is 50 percent regardless of the source. Previously, unearned income could be taxed up to a maximum rate of 70 percent.

Summary of the Economic Forecast

The economic forecast on which the tax model's estimates were based is the DRI "trendlong" forecast of November 1981. This forecast includes the complete program of personal and business tax cuts enacted in the Economic Recovery Tax Act of 1981. It does not assume all of the increases in defense spending planned by the present Administration will actually take place, although total Federal spending in current dollars does increase steadily through 1990. In constant dollars total Federal spending declines slightly in 1982, but rises in every other year, so that the real level in 1990 is 22.5 percent above 1980. During the same period real GNP increases 31.5 percent (an average annual rate of increase of 2.8 percent), and the Consumer Price Index, increases 110.6 percent (an average annual rate of increase of 7.7 percent). The Federal budget approaches balance in 1987, but the deficit gradually widens thereafter. The unemployment rate averages 8.2 percent in 1981, declines to 6.5 percent in 1986, then remains at about 6.2 percent for the rest of the period. Business fixed investment, which averaged 11.3 percent of GNP in 1981, increases to 11.9 percent in 1985, and 12.7 percent in 1990. Housing starts rise steadily from their low of 1.1 million units in 1981 to a peak of 12.0 million in 1989. The personal savings rate rises from 5.0 percent in 1981 to 5.9 percent in 1983, then declines, and averages under 5 percent for the last half of the decade. The prime interest rate declines steadily

from an annual peak of almost 19 percent in 1980 to 10 percent in 1990.

Results

The results of the DRI tax model's analysis of the impact of present law on average tax rates and shares of taxes paid are summarized in Tables 1 through 3. As these tables show, the top 5 percent of joint taxpayers, who reported adjusted gross incomes of over $55,850 in 1980, will see their average tax rate decline 3.5 percentage points from 26.6 percent in 1980 to 23.1 percent in 1985 and a further 2 percentage points to 21.1 percent in 1990. The predicted growth in the economy is expected to reduce their before-tax share of AGI from 16 percent to 15.5 percent in 1985 and to bring it back only to 15.7 percent by 1990. However, the effect of the tax reductions they receive will be to offset completely this autonomous reduction in before-tax income share. Thus, the top 5 percent of joint taxpayers increase their after-tax income share throughout the period by a (statistically insignificant) tenth of a percent by 1985, and by six-tenths of a percent by 1990. Their share of taxes paid would decline by 2.8 percent from 1980 to 1985, and by a further 1.7 percent from 1985 to 1990. In dollar amounts, their average savings comared with what they would have paid if their average tax rate had remained at the 1980 level will be over $4,000. By 1990 their average tax savings will have more than doubled, to over $9,000 by comparison with 1980 effective tax rates.

The 5 percent of joint taxpayers who reported 1980 adjusted gross incomes between $44,540 and $55,850 will see their average tax rate decline 2.4 percentage points from 21.4 percent in 1980

to 19 percent in 1985, and then rise half a percent to 19.5 percent in 1990. Their before-tax share of AGI is expected to be a constant 9.6 percent throughout the period, and their after-tax share increases only insignificantly. Their share of total taxes paid will decline slightly by 1985, but more than half of the decline will be made up by 1990. The average savings they realize from paying taxes at 1985 rates instead of 1980 rates will be about $1,800, less than half the savings of the top 5 percent. By 1990 their average tax savings will have grown only 13.5 percent.

The 40 percent of joint taxpayers who reported adjusted gross incomes in 1980 of between $22,610 and $44,540, who receive a bit less than half the total income reported on joint tax returns and pay a slightly smaller share of taxes, will see little change in their situation. Their share of before-tax AGI is expected to increase by about seven-tenths of a percent by 1985, and to remain higher. Their share of total taxes will increase throughout the period, so that their share of after-tax AGI is higher in 1985, but back to about the 1980 level by 1990. Their average effective tax rate declines slightly by 1985, but then increases. Their average tax saving from the reduction in effective rates is $210 in 1985 and $58 in 1990.

The bottom half of the joint taxpayers, those who reported adjusted gross incomes below $22,610 in 1980, are expected to see their shares of both before- and after- tax AGI decline

throughout the period, with the result that both their average effective tax rate and share of taxes paid will rise.

Because of limitations in both the methodology used to construct the income distribution curves, and the historical data on very high incomes, it would not be appropriate to extend the analysis to a smaller part of the upper tail of the income distribution than the top 5 percent. For single returns in 1980, the top 5 percent included all returns with adjusted gross income over $24,220. Even with the lower rates applied to single returns this meant that those single taxpayers who received the greatest benefits from the tax cuts embodied in present law represented too small a proportion of all single taxpayers to be isolated by the methodology used in the tax model. For this reason, after the preliminary stages the analysis was carried out only for joint returns.

TABLE 1

AVERAGE TAX RATES*
JOINT TAX RETURNS
UNDER PRESENT LAW

% of Joint Taxpayers	Lowest 50%	Next 40%	Next 5%	Top 5%
Range of 1980 Adjusted Gross Income	Under $22,610	$22,610 to $44,540	$44,540 to $55,850	Over $55,850
1980	8.3	15.7	21.4	26.6
1985	8.8	15.3	19.0	23.1
1990	8.7	15.6	19.5	21.1

* Taxes paid divided by Adjusted Gross Income

TABLE 2

SHARES OF ADJUSTED GROSS INCOME BEFORE AND AFTER TAXES, AND TAXES PAID BY TAXPAYERS FILING JOINT RETURNS UNDER PRESENT LAW

% of Joint Taxpayers	Lowest 50%	Next 40%	Next 5%	Top 5%
Range of 1980 Adjusted Gross Income	Under $22,610	$22,610 to $44,540	$44,540 to $55,850	Over $55,850
% of AGI				
1980	25.8	48.6	9.6	16.0
1985	25.5	49.3	9.6	15.5
1990	25.4	49.2	9.6	15.7
% of After-Tax AGI				
1980	28.2	48.8	9.0	14.0
1985	27.5	49.4	9.2	14.1
1990	27.3	48.9	9.1	14.6
% of Total Tax Paid				
1980	13.2	47.6	12.7	26.4
1985	14.8	49.6	12.0	23.6
1990	14.8	50.9	12.4	21.9

Note: Rows may not add to 100 due to rounding.

TABLE 3

COMPARISON OF AVERAGE TAXES PAID IN 1985 AND 1990
WITH AVERAGE TAXES IN THOSE YEARS IF THE EFFECTIVE
RATES OF 1980 HAD BEEN USED
(dollars)

% of Joint Taxpayers	Bottom 50%	Next 40%	Next 5%	Top 5%
Range of 1980 Adjusted Gross Income	Under $22,610	$22,610 to $44,540	$44,540 to $55,850	Over $55,850
1985				
Average Tax at the 1980 Effective Rate	1,771	7,653	16,213	32,536
Actual Average Tax	1,772	7,443	14,366	28,226
Difference	-1	210	1,847	4,310
1990				
Average Tax at the 1980 Effective Rate	2,456	11,249	23,935	39,202
Actual Average Tax	2,590	11,191	21,838	30,169
Difference	-133	58	2,097	9,033

Note: These hypothetical taxes are estimated using the average tax rate from Table 1, not the actual tax code in effect in 1980. Thus, they imply the elimination of all bracket creep (from either inflation or real growth) with no other change in the tax system.

APPENDIX
TECHNICAL DESCRIPTION OF THE DRI TAX MODEL

The current version of the DRI tax model consists of ten basic routines (some with more than one version) and two models, which are run in sequence. In the terminology employed here, a routine goes through a series of calculations in a specified order to produce its result, while a model contains simultaneous equations which must be solved iteratively until they reach a stable solution. The routines and models, whose names are capitalized, are described below in the order in which they are used. Arguments, which must be provided for some routines, are letters or letter/number combinations enclosed in parenthesis and attached at the end of the routine name which determine which data set is used by the routine.

Step 1 -- GETMACRODATA brings the macroeconomic variables used in the tax model from a specified macro model simulation and converts them to annual frequency. The routine can be edited to change the name of the DRI or user simulation, or other databank, from which the macro variables are to be drawn.

Step 2 -- The model AGIMOD forecasts adjusted gross income (AGI) and the parameters of the joint and single return AGI distributions for each year of the simulation interval.

Step 3 -- DECODISTB calculates the actual joint or single distribution for each year, depending on whether the argument (J) or (S) is specified.

Step 4 -- JECCUTS calculates the median income for each of 12 historically based AGI classes. The 12 classes, which are used for both joint and single returns and for all years, are as follows:

0	$ 2,000
$ 2,000	$ 4,000
$ 4,000	$ 6,000
$ 6,000	$ 8,000
$ 8,000	$ 10,000
$ 10,000	$ 15,000
$ 15,000	$ 20,000
$ 20,000	$ 25,000
$ 25,000	$ 30,000
$ 30,000	$ 50,000
$ 50,000	$100,000
$100,000 and above	

Step 5 -- STANDS uses four specified time series, SDHIGHJ, SDLOWJ, SDHIGHS, SDLOWS (the maximum and minimum standard deduction for joint and single returns) to create the time series for different income classes needed to solve the model in the next step. In the forecast period the high and low values for each type of return are equal since there is no longer any reason to make a distinction. The four variables exist in the workspace, rather than in the routine, so they are changed without editing the routine whenever

assumptions about the standard deduction are changed.

Step 6 -- For each of the income classes established in Step 4, the model DEDEXPMOD forecasts the percent of returns taking the standard deduction, the average deduction for those who do itemize, and the average number of exemptions. This forecast is based on macroeconomic and demographic variables, and on the SD variables calculated in Step 5.

Step 7 -- TI@US7779 calculates actual taxable income for each of the median incomes calculated in Step 4, using the variables estimated in Step 6, plus VEXEMP, the time series specified in the workspace for the value of the personal exemption. Because current law specifically incorporates the standard deduction in the bracket amounts in the tax tables, only the difference between the average itemized deduction and the standard deduction (weighted by the percent itemizing), and the average value of exemptions is taken out of AGI. This routine can be edited to change assumptions about the treatment of itemized deductions. For instance, multiplying the term AID in the equation specified in line eight of the routine by .5 would reduce itemized deductions by 50 percent across-the-board. Changing specific types of itemized

deductions would require changes in specific equations in DEDEXPMOD, based on the assumed use of such deductions at different income levels.

Step 8 -- TLJ@US__ and TLS@US__ calculate taxes owed for each of the 12 taxable incomes calculated in Step 7. These routines, and all subsequent routines, can be run for only one year at a time. The TLJ@US routines contain vectors for the marginal tax rates (MRATETAXJ and MRATETAXS) and the upper and lower bracket amounts (LIMIT79J, LIMIT79S, MBASE79J and MBASE79S). There should be a new version of each of these routines for each year in which the vectors differ, and the last two places in the routine name should identify the first year to which the version's values apply. The presently available versions are TLJ@US79, for joint returns in 1979 and 1980, TLJ@US85, for joint returns in 1985, and TLJ@US90 for joint returns in 1990. Comparable routines have been created for single returns, but should be carefully proofread before use. These routines create in the workspace vectors with the above names. Extreme care should be taken in editing them, since a mistake in naming the vector in the routine will probably mean that another year's vector will be used instead of the one intended.

Step 9 -- TLTOTAL@US calculates the total tax paid by either all joint or all single returns (depending on whether the argument (J) or (S) is specified) by multiplying the tax paid at the median of each AGI class by the number of returns falling within that class. The amount of the total tax is called TLTOTALJ for joint returns and TLTOTALS for single returns.

Step 10 -- ATPARAMSJ1 and ATPARAMSS1 calculate the parameters and construct the after-tax curve for either the joint or the single return distribution. This curve is constrained so that the area between it and the AGI curve cannot differ from the total tax calculated in Step 9 by more than $\pm$0.5 percent. When one of these routines is run it automatically prints out the ratio of the between curve area divided by the total tax from Step 9, for the first attempt at the after-tax curve and for any subsequent iterations.

Step 11 -- AIMCELLCUTS divides any before- or after-tax distribution into the nine deciles below which 90 percent of the returns fall, the top 5 percent and the second 5 percent from the top. It automatically prints the upper income boundary for each class, and the percent of income (in

ratio form) received by that class. This routine is run twice for each type of return, first on the before-tax distribution with the argument (J) or (S), and then on an after-tax disstribution with the argument (JAT1) or (SAT1).

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