INCOME, TAXES, AND TAX PROGRESSIVITY: AN EXAMINATION OF RECENT TRENDS IN THE DISTRIBUTION OF INDIVIDUAL INCOME AND TAXES

Tom Petska and Mike Strudler, Statistics of Income Division, Internal Revenue Service
Internal Revenue Service, P. O. Box 2608, Washington, DC 20013-2608

KEY WORDS: Income distribution; individual income tax; tax progressivity

Statistics from individual income tax returns reveal some dramatic changes in the past 18 years. The tax reforms of 1981 and 1986 significantly lowered individual income tax rates and, in the latter, substantially broadened the income tax base [1]. Tax law changes effective for 1991 and 1993 initiated rising individual income tax rates and further modifications to the definition of taxable income. In addition, two recessions have transpired, and the U.S. economy has become more service-oriented and global in nature. With all of these changes, a question that arises is what has happened to the distribution of individual income and the shares of taxes paid by various income-size classes?

This paper is an examination of recent trends in the distribution of individual incomes based on a consistent measure of taxable income. The paper has four sections. The first section briefly summarizes background information on a measure of individual income derived as a "retrospective concept" from individual income tax returns. The second section highlights some of the more substantial changes to the Internal Revenue (Tax) Code, particularly those affecting individual income tax liabilities. The third section examines and analyzes aggregate time series data on individual income and taxes based on income tax return filings with the IRS. The last section summarizes some of the results, presents conclusions, and describes future research plans.

A Retrospective Definition of Income

In order to analyze changes in income and taxes over a period of years, a consistent definition of income must be used [2]. However, the most commonly used income concept available from Federal income tax returns, adjusted gross income (AGI), was designed to facilitate tax administration, and its definition has changed over time to reflect modifications to the Internal Revenue Code.

The new tax laws of the 1980's and 1990's, including the Economic Recovery Tax Act of 1981 (ERTA), the Tax Reform Act of 1986 (TRA), the Revenue Reconciliation Act of 1990 (RRA), and the Omnibus Budget and Reconciliation Act of 1993 (OBRA) made significant changes to both the tax rate schedules and the components of AGI. These changes made it more difficult to use AGI for accurate intertemporal comparisons of income. For this reason, an income definition that would be applicable over several years was developed to allow comparisons both before and after the major tax legislation [3].

The "1979 Income Concept" was developed to address this problem by providing a more uniform measure of income across tax years. This "retrospective income" concept was calculated by including the same income and deduction items in each year's income calculation and from items available on Federal individual income tax returns. Tax Years 1979 through 1986 were used as base years in identifying the income and deduction items included in this concept. As a result, the definition of the 1979 Income Concept is consistent throughout the base years and was used for later years to compare income by including only income components common to all years [3,4].

The calculation of the 1979 Income Concept is shown in Figure A. Several items partially excluded from AGI for the base years were fully included, the largest of which was capital gains. The full amounts of all capital gains, as well as all dividends and unemployment compensation, were included in the income calculation. Total pensions, annuities, IRA distributions, and rollovers were added, including the nontaxable portions that were excluded from AGI. Social Security benefits were omitted because they were not reported on tax returns until 1984. Also, any depreciation in excess of straight-line depreciation, which was subtracted in computing AGI, was added back [4].

The 1979 Income Concept applied to 1996 includes many income and deduction items that are components of AGI and also includes nontaxable (i.e., tax-exempt) amounts of income reported on individual income tax returns, as well as disallowed passive loss deductions. Deductions that are subtracted in the calculation of the 1979 Income Concept include employee business expenses, alimony paid, and moving expenses. These same items were subtracted in computing AGI until 1987, when unreimbursed business expenses and moving expenses were changed from adjustments to itemized deductions. (For 1996, moving expenses were once again an adjustment to income.) The amounts reported for moving expenses (for 1987-1993) and employee business expenses by taxpayers who itemized deductions were also subtracted in the calculation of the 1979 Income Concept. Taxpayers who did not itemize deductions, however, could not claim either of these two expenses because they were not allowed as adjustments after 1986 (until 1994, when moving expenses were once

Figure A.--Components of the 1979 Income Concept for Tax Year 1996

1979 Total Income Concept =

Salaries and wages[1]

Plus (+):
Interest[1]
Dividends[1]
Taxable refunds[1]
Alimony received[1]
Capital gains minus allowable losses reported on Schedule D[1]
Capital gains and losses not reported on Schedule D[1]
Other gains and losses (Form 4797)[1]
Business net income or loss[1]
Farm net income or loss[1]
Rent net income or loss[1]
Royalty net income or loss[1]
Partnership net income or loss[1]
S Corporation net income or loss[1]
Farm rental net income or loss[1]
Estate or trust net income or loss[1]
Unemployment compensation[1]
Depreciation in excess of straight-line depreciation[2]
Total pension income[3]
Other net income or loss[1]
Net operating loss[1]

Minus (-):
Disallowed passive losses (Form 8582)[4]
Moving expenses[1]
Alimony paid[1]
Unreimbursed business expenses[4]

1 Included in adjusted gross income (AGI) for Tax Year 1996.
2 Adjustment to add back excess depreciation (accelerated over straight-line depreciation) deducted in the course of a trade or business and included in net income (loss) amounts.
3 Includes taxable and tax-exempt pension and retirement distributions, including IRA distributions.
4 Not included in AGI for Tax Year 1996.

again allowed as an adjustment). For this reason, the deduction for these two expenses beginning in 1987 is not completely comparable to that for previous years [4].

Comparison between AGI and retrospective income. --As stated, the Tax Reform Act of 1986 (TRA) made extensive changes to the calculation of AGI beginning with 1987, and these changes made necessary a revision of the calculation of the 1979 Income Concept, in order to make tax years beginning with 1987 comparable to the base years, 1979 through 1986. TRA limited the deduction of passive losses and eliminated unreimbursed employee business expenses and moving expenses as adjustments in figuring AGI beginning with Tax Year 1987. Since passive losses had been fully deductible for both income measures prior to 1987, the disallowed passive losses had to be deducted in the 1979 Income Concept calculation for tax years after 1986 [4].

Before TRA became effective, a comparison of income measured by AGI with that measured by the 1979 Income Concept showed significant differences at income levels of $200,000 or more. But, with the elimination of preferential treatment of various income items by TRA, such as the exclusion of a portion of capital gains, much of the difference disappeared. Under tax law prior to 1987, the capital gains exclusion accounted for the largest difference between the two income measures at the higher income levels. For 1996, the 1979 retrospective income amount was 8.3 percent higher than income calculated using AGI. This difference was primarily attributed to the inclusion of more than $130.6 billion in nontaxable pensions and annuities (including IRA distributions) in retrospective income.

Some limitations of the data.--The Statistics of Income (SOI) Division of IRS produces annual studies of individual income and taxes by sampling and compiling data from Forms 1040, *U. S. Individual Income Tax Return*. Returns are selected as part of random, stratified cross-sectional samples. For this study, returns are then tabulated into size classes of retrospective income, and the percentile thresholds are estimated by interpolation [5].

While the 1979 retrospective income concept is a consistent measure for interyear income comparisons, its application in this study still has shortcomings. First, since the data set is based on successive cross-sectional samples, it is not a panel. In the underlying microdata, individuals can move in and out of annual studies, as well as move across size classes. For example, a person with a large windfall gain could appear in the top 5-percent class in one year, but then fall to a lower size class or even out of the samples in other years.

It should also be noted that cash and in-kind public assistance, as well as Earned Income Tax Credit refunds, are all excluded from the income measure. Further, while Federal individual income taxes are included in the database, Social Security (FICA) taxes, corporation income taxes, and excise taxes are not. Therefore, the database is a good measure of what it includes but does have some limitations in content or scope.

Marginal and Average Tax Rates

Marginal tax rates for a specific individual income tax return depend on the types and amounts of income reported and assumptions concerning the order in which the income is taxed. This determination is complicated by the presence of the alternative minimum tax, various tax credits, limitations on itemized deductions, and phaseout of exemptions, all of which are not specifically addressed in this study. However, despite these limitations, it is still of interest to compare the highest individual marginal tax rate and the highest marginal tax rate for capital gains to the empirically-determined average effective tax rate, all of which are shown in Figure B [6].

Of the three series, the average tax is clearly the lowest and the most stable over the time period. The average tax rate, which was computed from the retrospective income and tax liabilities, varies between 12.5 percent and 15.1 percent over this 18-year period. The variation between years is small despite the frequent and substantial changes to the marginal tax rates, which are at considerably higher levels and show substantially more change.

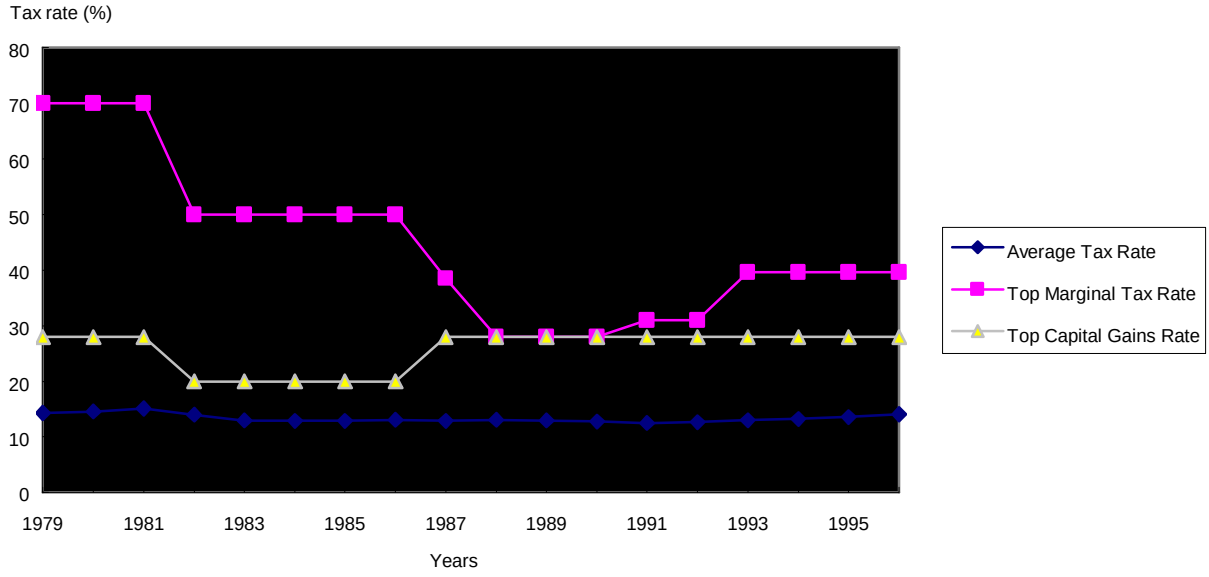
From an historical perspective, what is most striking about the top individual marginal tax rate is that it was as high as 70 percent for the highest income levels (such as married filing joint returns with taxable income over $215,400) for 1979 through 1981. These historically high marginal tax rates declined substantially with the passage of the Economic Recovery Tax Act (ERTA) in 1981, effective for Tax Year 1982, which lowered the top marginal rate to 50 percent, where it remained through 1986. The passage of the Tax Reform Act of 1986 (TRA), the most comprehensive revision of the Internal Revenue Code since 1954, broadened the individual tax base by curtailing or rescinding many provisions that had previously eroded the base, while lowering the top marginal tax rate to 28 percent (once fully phased in for 1988).

The new rate structure remained in effect through Tax Year 1990, but, beginning for Tax Year 1991, the top individual rate began to climb. For 1991, the top marginal tax rate climbed to 31 percent, and it again increased, this time to 39.6 percent, under the Omnibus Budget and Reconciliation Act (OBRA) beginning for 1993. The highest marginal rate for capital gains income is also shown in the figure, since it is a key determinant of the overall effective rate, particularly for high-income individuals who often have substantial capital gains. Despite the high marginal tax rates, particularly in the pre-TRA period, capital gains have generally been taxed at significantly lower levels. In the pre-TRA period, this was mainly attributable to the fact that 60 percent of long-term gains could be excluded. So, even with top marginal rates of 70 percent in the early 1980's, the 60-percent exclusion effectively created a maximum tax rate of 28 percent (40 percent of 70 percent) [7]. When the top individual marginal tax rate was lowered to 50 percent, effective for 1982, the top capital gains rate declined correspondingly to 20 percent (40 percent of 50 percent).

Time Series Data on Income and Taxes

This section of the paper examines the income percentile data for 1979 through 1996 with attention to the income and tax shares by percentile and average tax rates. The database for this study ranks individual taxpayers from highest to lowest, by size of retrospective income annually, for the period 1979 to 1996 and groups them into income-size classes. The income-size classes were converted

Figure B.--Average and Marginal Tax Rates, 1979-1996



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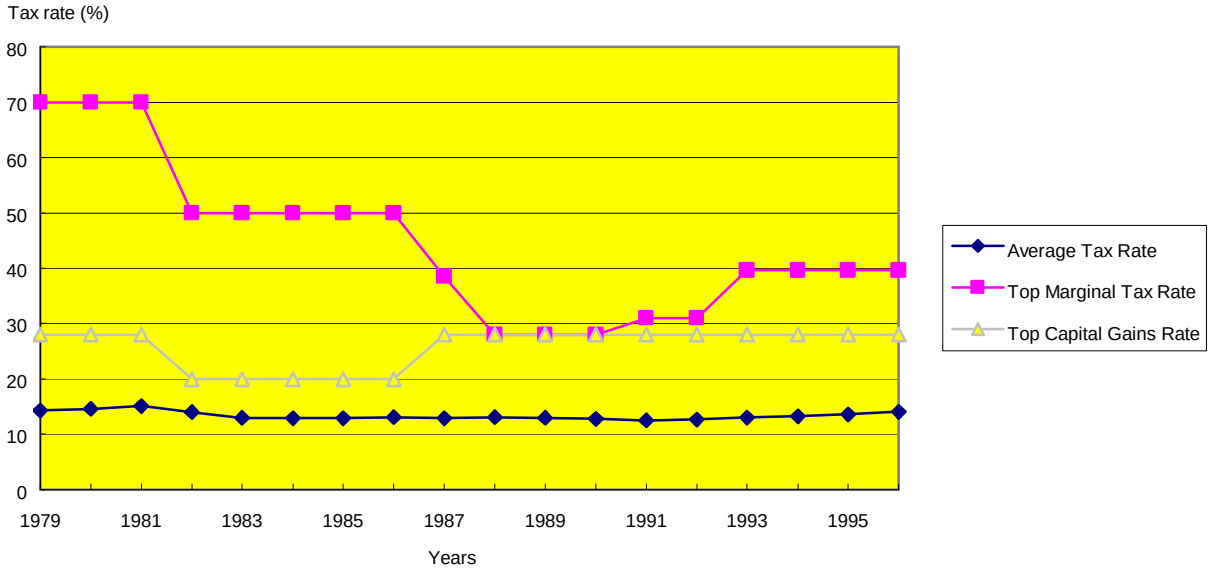


to percentiles and were collapsed to: the top 1 percent; the next 1 to 10 percent; the next 10 to 50 percent; and the bottom 50 percent of the overall income distribution. In addition to the numbers of individual tax returns and the amount of retrospective income in each size class, the database includes taxes paid. Using these data, the income and tax shares and the average taxes have all been computed for each income-size class for all years.

With this database, we sought to answer the following questions--have changes to the tax laws or, more specifically, the tax rates, affected the distribution of individual incomes (i.e., income shares), the shares of taxes paid by income-size classes, and the average tax burdens or effective rates of taxation?

Income shares.--The data on income shares by income-size class are shown in Figure C. The share of income accounted for by the top 1 percent of the income distribution has climbed steadily from a low of 9.6 percent for 1979 to a high of 16.5 percent for 1996. While this increase is quite steady, there were some significantly large jumps, particularly for 1986, due to a surge in capital gains realizations after the passage, but before the implementation, of TRA. The top 1-percent share also increased for 1995 and 1996. Notable declines in the top 1-percent share occurred in the recession years of 1981 and 1990-1991.

This pattern of an increasing share of total income is mirrored in the 1-to-10 percent class, but to a lesser extent. For this group, the income share increased from 23.5 percent to 26.0 percent in this period. The lower income-size classes, 10-to-50 percent and the bottom 50 percent, both show declines in shares of total incomes over the 18-year period. However, the 10-to-50 percent group still accounted for the largest share of income in all years.

Tax shares.--Data on tax shares by income-size groups are shown in Figure D. The share of taxes accounted for by the top 1-percent group also climbed steadily in this period, from initially at 19.8 percent for 1979, then declining to a low of 17.4 percent for 1981, but then rising to a high of 31.7 percent for 1996. As for incomes, there were some unusually large increases, particularly for 1986, but also for 1993, the first year of the 39.6-percent marginal tax rate. As for incomes, the tax share of the top 1-percent group declined in recession years.

The 1-to-10 percent size class exhibited relatively little change in the overall share of taxes paid, increasing from 30.1 percent to 30.3 percent in the 18-year period. The 10-to-50 percent class and the bottom 50-percent class both had declining shares of total taxes paid. The 10-to-50 percent class accounted for the largest share in taxes paid, but had a decline from 43.0 percent to 33.6 percent of the total in the 1979 to 1996 period. The bottom 50-percent class had a decline in share of taxes paid from 7.0 percent to 4.4 percent in this period.

Effective tax rates.--Average tax rates by income-size class are presented in Figure E. In looking at these data, what is most striking is the progressivity of the tax system--average tax burdens increase with income-size classes in all years, since none of the lines intersects. Clearly, the overall progressivity of the individual tax system is reaffirmed.

Average tax rates declined between 1979 and 1996 for all income-size classes; however, the trends are not as

Figure C.--Income Shares by Income Percentiles by Year, 1979-1996

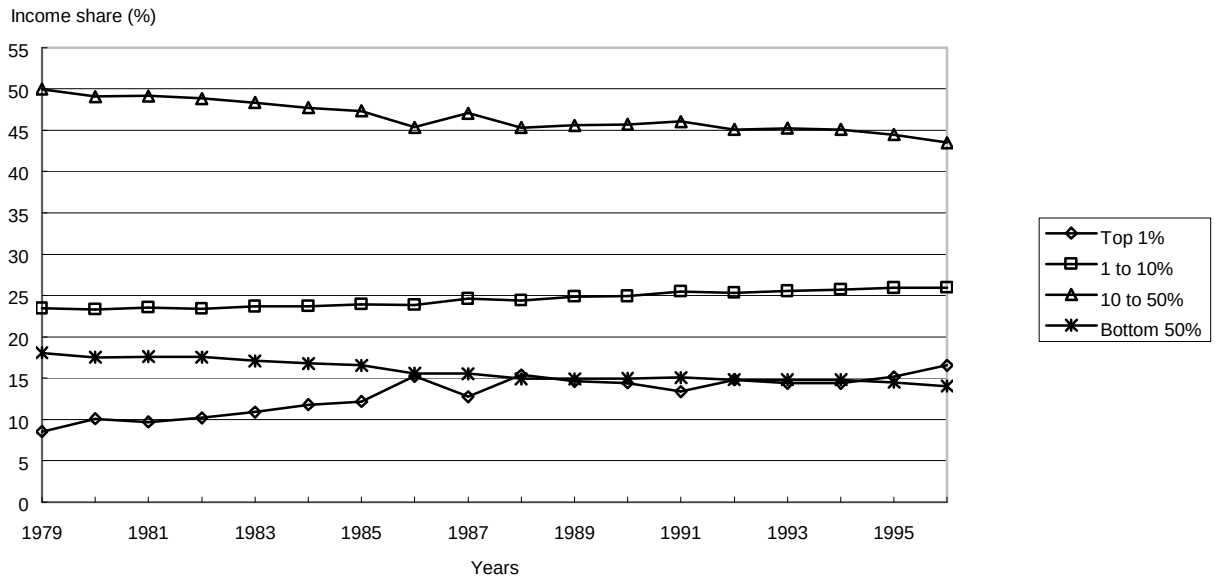
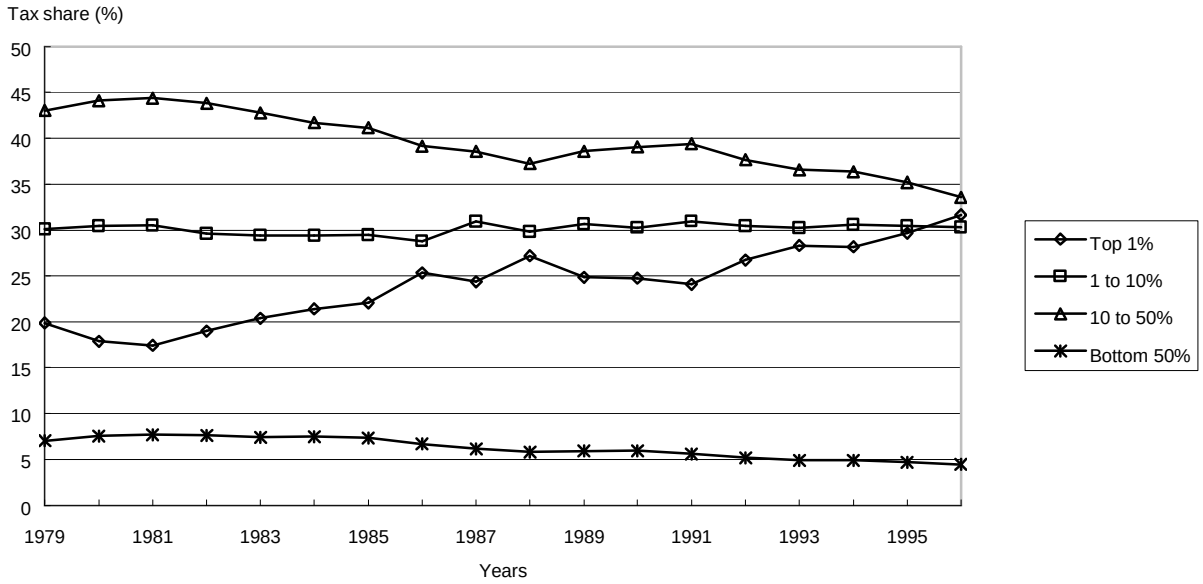


Figure D.--Tax Shares by Income Percentiles by Year, 1979-1996



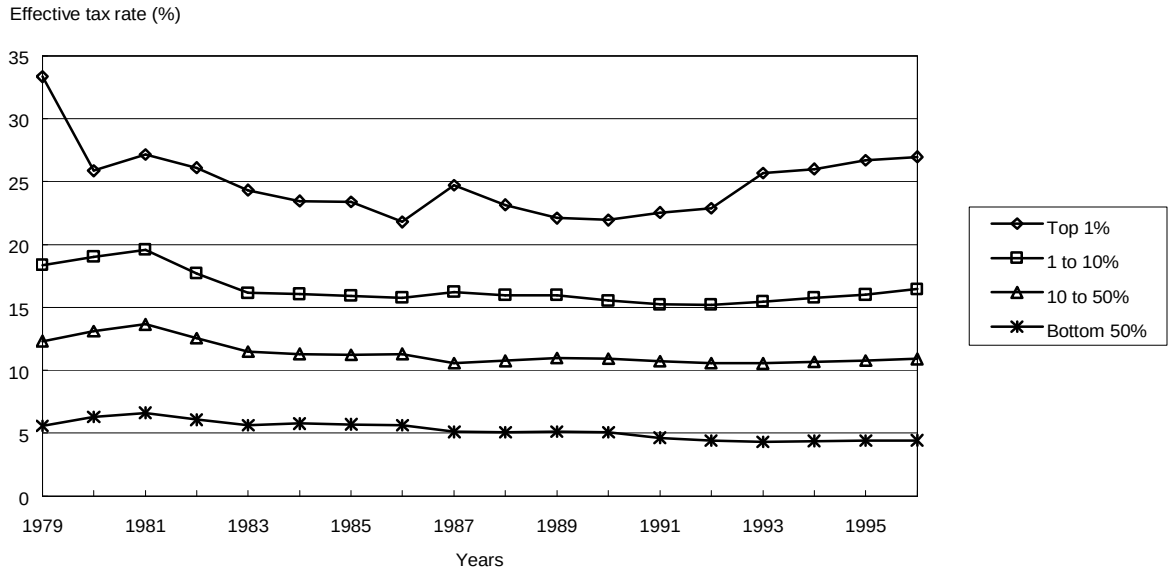
steady as those for the income and tax shares. For example, all size classes show declines in average taxes in the pre-TRA years, but all show increases in the 1994-96 period. The top 1-percent group clearly shows the effects of the 1986 capital gains realizations, in anticipation of the ending of the long-term gains exclusion, which began in 1987. This brought about a substantial increase in realizations that swelled the income amounts in the highest income groups. This effect caused a significant increase in income, taxes, and the income threshold of the top 1-percent group for 1986.

As a result of the OBRA-initiated 39.6-percent top marginal tax rate, both the average tax rate and the income tax shares of the 1-percent group increased sharply beginning for 1993. This was an expected result, but average tax increases were also evident in smaller income-size classes as well.

Conclusions and Future Research

Some conclusions can be drawn from examination of these data. First, the income and tax shares of the top 1-percent group increased substantially in this period. The income share of the top 1-percent rose considerably from 9.6 percent to 16.5 percent of total income, while the share of taxes paid by this group also increased significantly, rising from 19.8 percent to 31.7 percent, an increase

Figure E.--Effective Tax Rate for Income Percentile Classes by Year, 1979-1996



of nearly 60 percent. The income share of the 1-to-10 percent group increased modestly, from 23.5 percent to 26.0 percent of the total, but their share of taxes only increased from 30.1 percent to 30.3 percent.

The lower income groups had very different patterns of change over this period. The 10-to-50 percent group, while accounting for the largest shares of both income and taxes, had its income share decline from 50.0 percent to 43.5 percent and its tax share decline from 43.0 percent to 33.6 percent. The income share of the bottom 50 percent declined from 18.1 percent to 14.0 percent, and its tax share declined from 7.0 percent to 4.4 percent.

Overall, average tax rates increased with income for all years. Clearly, the average effective tax rate grew with increases in the size of income. This is conclusive evidence of the effectiveness of tax progressivity. Between 1979 and 1996, average tax rates declined for each income-size group; however, all income-size groups show increases for 1994 and later years.

In summary, the upper tail of the income distribution has increased its share of total income at the expense of the lower percentiles. However, this rise in inequality in pre-tax income has been somewhat offset by the increases in taxes paid by the top groups, particularly the top 1-percent group in the post-OBRA period.

This study is the first of several planned to use the retrospective income-size distribution database to further examine distributional effects. Plans are also to extend this analysis and compare these results to those of other researchers.

Footnotes

[1] Internal Revenue Service, *Explanation of the Tax Reform Act of 1986 for Individuals,* Publication 920 and the Joint Committee on Taxation, General Explanation of the Tax Reform Act of 1986.

[2] See, for example, the following for discussions on measuring economic income: Haig, Robert Murray, "The Concept of Income — Economic and Legal Aspects," *The Federal Income Tax,* Columbia University Press, 1921; Simons, Henry C., *Personal Income Taxation: The Definition of Income as a Problem of Fiscal Policy,* Chicago University Press, 1938; and Nelson, Susan, "Family Economic Income and Other Income Concepts Used in Analyzing Tax Reform," *Compendium of Tax Research, 1986,* Office of Tax Analysis, U.S. Department of the Treasury, 1987.

[3] Hostetter, Susan, "Measuring Income for Developing and Reviewing Individual Tax Law Changes: Exploration of Alternative Concepts," *1987 Proceedings of the American Statistical Association, Section on Survey Research Methods.*

[4] See, for example, Cruciano, Therese, "Individual Income Tax Rates and Tax Shares, 1995," *Statistics of Income (SOI) Bulletin,* Spring 1998, Volume 17, Number 4; and Internal Revenue Service, *Statistics of Income--Individual Income Tax Returns* (selected years).

[5] Oh, H. Lock, "Osculatory Interpolations with a Monotonicity Constraint," *1977 Proceedings of the American Statistical Association, Section on Statistical Computing.*

[6] For this paper, marginal tax rate is the top rate paid on taxable income and is based on income tax before credits. Taxes, taxes paid, tax liabilities, tax shares, and average or effective tax rates are based on income tax, defined as income tax after credits plus alternative minimum tax less nonrefundable earned income credit.

[7] This does not take into account the fact that excluded income was subject to the alternative minimum tax.

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