Excerpt from

Individual Income Tax Shares and Average Tax Rates, Tax Years 1951–1986*

By Janet McCubbin and Fritz Scheuren

This is the second in a series of articles on the history of individual income tax shares and average tax rates. The first article appeared in the Winter 1988-89 *Bulletin* and covered the years 1916 through 1950 [1]. This brief sequel provides data to complete that time series. A third article, scheduled for publication in the Winter 1989-90 *Bulletin*, will include an overall (but still preliminary) look at income and tax shares for the entire 1916 through 1986 period.

As noted in the first article, all of the data presented in the series have been derived from previously published SOI annual reports. The original information on the number of returns, income and tax by income size class, was extracted from the printed volumes and transferred to computer tape. These data were then manipulated as described below, to produce the tables included here and in the earlier article. A principal goal of this historical treatment is to make available previously published data that would otherwise be difficult to find or inconvenient to use. There are plans to eventually provide all of the data produced on a "floppy" diskette to facilitate their use by outside researchers.

OVERVIEW OF DATA PREPARATION

The data captured from the original SOI publications have been subjected to a number of adjustments designed to overcome some of the problems inherent in using a set of annual cross-sections in a time-series context. Three adjustments were made to the data:

- First, the Consumer Price Index was used to eliminate the influence of the inflation (and deflation) of prices over the period; to this end, all money amounts are presented in 1986 dollars, unless otherwise noted [2] (see Figure A).

- Second, to achieve some measure of comparability over time, attention has been confined to returns with income of $25,000 or more in 1986 dollars. A convention like this is useful for constructing the overall time series, since prior to 1940, the Federal income tax was not a "mass" tax, but was paid only by individuals with fairly high incomes [3].

- Finally, a relatively sophisticated interpolation technique was used to convert the published current dollar income size classes and corresponding aggregate data to a usable constant dollar time series [4].

Six tables summarizing the adjusted data are provided at the end of this article. These generally parallel the tables provided earlier for 1916 to 1950, so that they can be used together to look at the entire period.

Table 1 summarizes, *in current dollars*, the number of returns, income and tax for each year, for *all* individual income tax returns. This table is not adjusted for variations in filing requirements; rather, it simply shows what the published Statistics of Income data would have looked like in the 1951 through 1986 period if they had always been tabulated by the same current dollar income size classes.

Tables 2 through 6 are *in constant dollars* and include only those returns with adjusted gross income (AGI) of $25,000 or more in 1986 dollars. This means that for the percentages of returns, income and tax shown (the top 1 percent of returns, for example), the base is returns with AGI of $25,000 or more in 1986 dollars.

- Table 2 presents selected statistics for groups of returns with *constant tax shares* (10 to 50 percent, in increments of 5) for each year. These statistics include the number of returns in the group, the percentage of returns (with AGI of $25,000 or more) accounted for by the group, adjusted gross income, Federal income tax, mean income before and after tax, the average income tax, the minimum income required for a return to be included in the group, the income share of the group

Figure A.—Consumer Price Index, 1986 = 100.

Year	Index	Year	Index
1951	23.7	1969	33.4
1952	24.2	1970	35.4
1953	24.4	1971	36.9
1954	24.5	1972	38.2
1955	24.4	1973	40.5
1956	24.8	1974	45.0
1957	25.7	1975	49.1
1958	26.4	1976	51.9
1959	26.6	1977	55.3
1960	27.0	1978	59.5
1961	27.3	1979	66.2
1962	27.6	1980	75.2
1963	27.9	1981	82.9
1964	28.3	1982	88.0
1965	28.8	1983	90.9
1966	29.6	1984	94.7
1967	30.5	1985	98.1
1968	31.7	1986	100.0

Source: U.S. Bureau of Labor Statistics, as cited in *Statistical Abstract of the United States*, U.S. Department of Commerce, Bureau of the Census. The index for 1967 = 100 was converted so that 1986 = 100.

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before and after tax, the number of returns per 100,000 of U.S. population, the average income tax rate and the income tax share of the group. All groups are cumulated from the top.

- Table 3 provides the same statistics for groups of returns with *constant income shares* (5 to 50 percent, in increments of 5) for each year.

- Table 4 shows the same statistics again, for *constant percentiles of returns* (1 percent and then 5 to 50 percent, in increments of 5) for each year.

- Table 5 consists of the same data, tabulated by selected *constant dollar* ($25,000 to $1,000,000) *income size classes*. Part VIII of this table may be of particular interest, as it shows the statistics for the entire group of returns under consideration: returns with AGI of $25,000 or more.

- Table 6 depicts the income and tax data tabulated by selected *constant numbers (25 to 200) of returns for each 100,000 of U.S. population*. That is, it shows the statistics for groups of returns representing selected constant percentages (0.025 to 0.20 percent) of the U.S. population.

BASIC REFERENCE GROUP

As noted above, the information in this article is generally limited to returns with income of $25,000 or more in 1986 dollars. For the pre-World War II period, limiting analysis in this way is advantageous as it provides a reasonably stable percentage of the population for study (see Figure B); however, in the post-World War II period this approach does not come close to delineating a constant percentage of the U.S. population, due to the growth in real income over the period [5]. It is primarily for this reason that the use of the data (in their current form) *solely* for analyses of the more recent period is not recommended. While price effects have been accounted for by converting the data to constant dollars and fluctuations in the filing requirement have been circumvented by limiting analysis to returns with income of $25,000 or more, changes in the distribution of real income have not been addressed. The growth in real income is indicated by the increase in the ratio of returns with AGI of $25,000 or more to the U.S. population, over the 1951 to 1986 period (see Figure C).

A better way to study tax shares would be to examine returns that represent a constant portion (the top 1 percent, for example) of the real income distribution for each year; this is what Pechman and others have done [6]. However, as noted in the previously cited article on 1916 to 1950, neither the Census Bureau data on the number of families in the United States, nor the Bureau of Economic Analysis series relating income tax data to data on all personal income in the United States, are available prior to 1940 [7,8]. These series will have to be estimated for earlier years before this more appropriate approach can be applied to the entire set of tax data.

Confining analysis to returns with income of $25,000 or more (in 1986 dollars) does result in a loss of data. For the 1916 to 1950 period, this omission is not a very serious problem. During nearly all of the pre-1940 period, returns with income of $25,000 or more accounted for over 90 percent of the reported income tax liability (see Figure D; 1916 is not shown because all returns filed for 1916 had income of over $25,000 in 1986 dollars.) After a steep drop in the 1940's, the percentage of the total tax liability accounted for by this group began to rise, but not to the 90 percent level of the earlier years. In the 1951 to 1986 period, however, returns with $25,000 or more still accounted for an average of over three-fourths of the tax liability reported for each year (see Figure E).

Trends in tax liability over the entire 1916 to 1986 period are shown in Figures F and G, where average tax rates for returns with $25,000 or more are compared to those for all returns. In the early period (1916 to 1950), the two average tax rates generally move together. During 1940 to 1944, however, average tax rates increased dramatically; these rate increases were much larger for returns with income of $25,000 or more. Tax rates for both groups generally fell from 1944 to 1949. This trend of declining average tax rates continued from 1952 to 1965, for returns with $25,000 or more. Average tax rates for *all* returns, however, increased in most of those years. Beginning with 1963, the relationship between the average tax rates of the two groups is fairly constant. The difference between the average tax rates for the two groups ranges from 7.94 percentage points for 1951 to 2.08 percentage points for 1973.

EXTENDING EARLIER ANALYSES

The earlier article in this series included an example of one type of analysis that can be done with the tables provided. This vein of research was opened up through a column-by-column survey of data from the last panel of Table 6. In both articles, that panel consists of estimates for the top 200 returns per 100,000 U.S. population. (Note that the number of returns in this group is equal to 0.2 percent of the U.S. population in each year.)

The data at the end of this article allow researchers to extend such an analysis to the 1951 through 1986 period. To illustrate how this can be done using the corresponding information for the later years, tax shares and average tax rates (found in columns 12 and 13 of Table 6) are discussed below. The purpose of examining these data is not to provide a thorough analysis of tax shares and tax rates for

Figure B.
All Returns and Returns with Income of $25,000 or More as Percentages of U.S. Population, 1916–1950

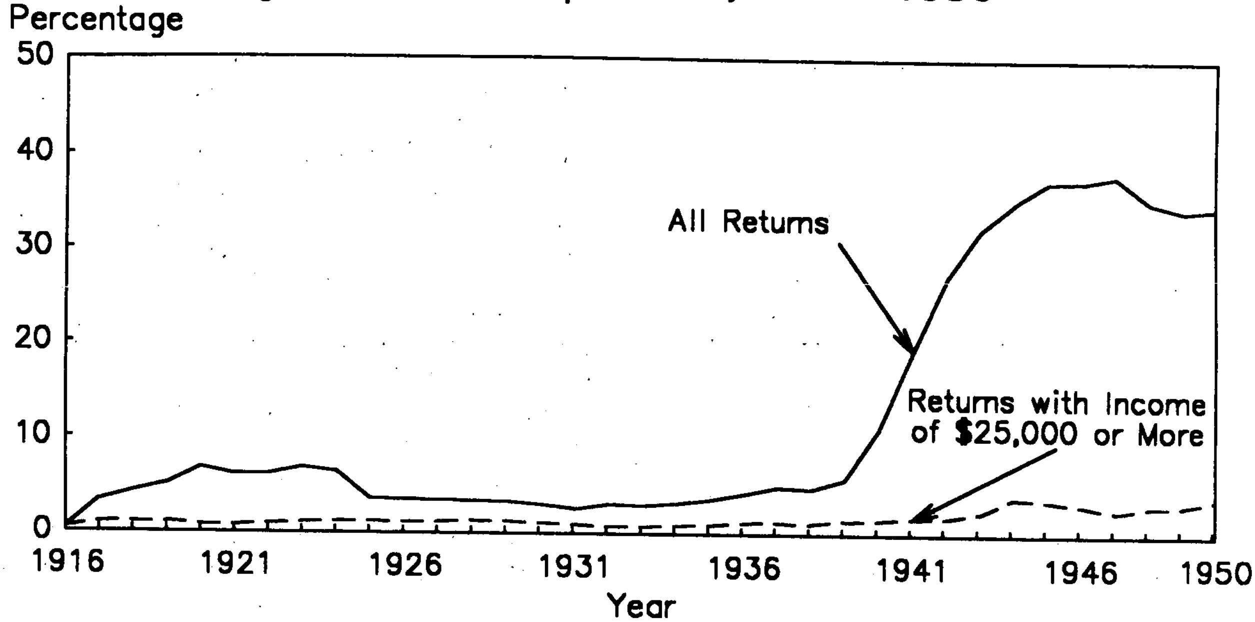


Figure C.
All Returns and Returns with Income of $25,000 or More as Percentages of U.S. Population, 1951–1986

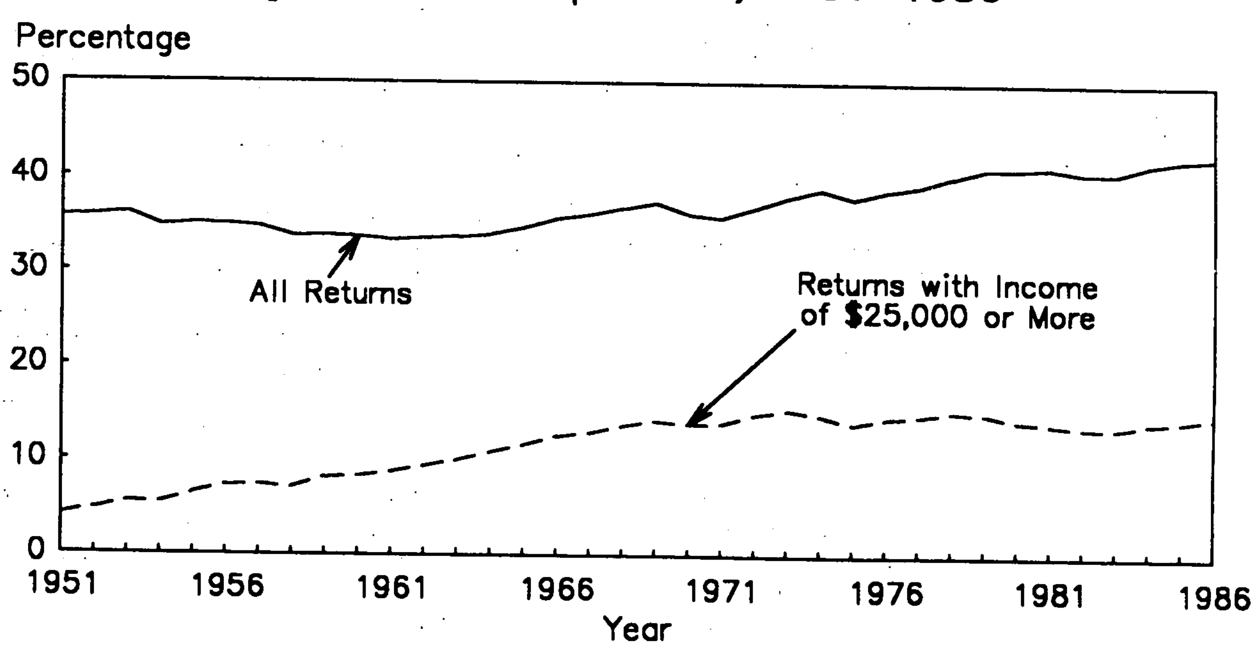


Figure D.
Returns with Income of $25,000 or More:
Share of All Returns, Income and Tax, 1917-1950

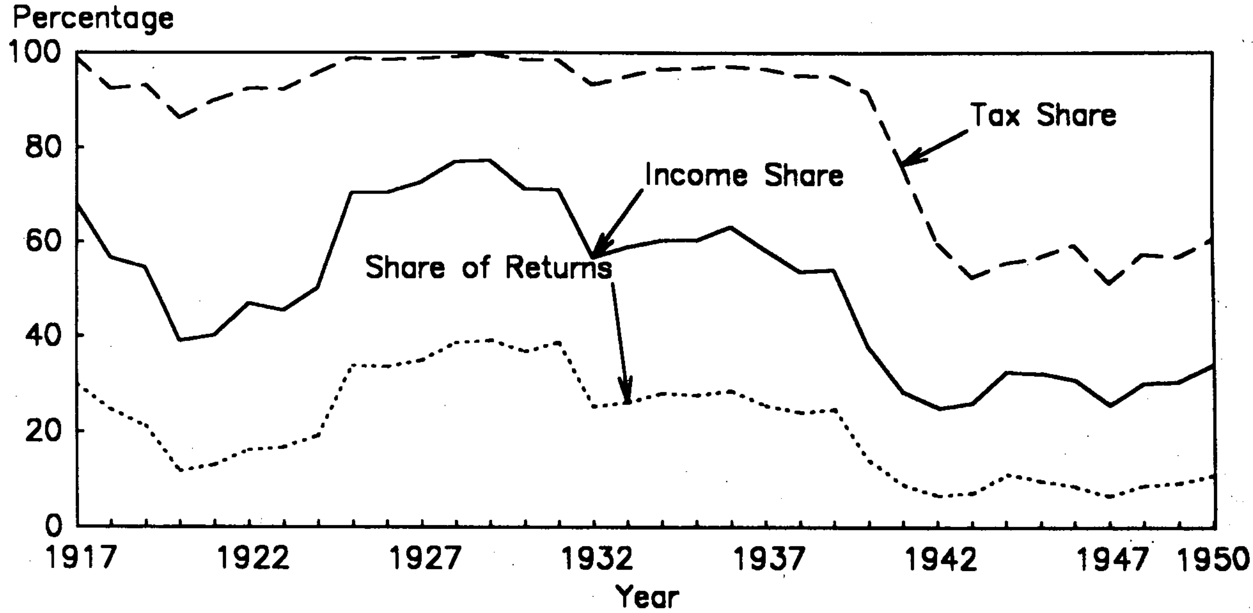


Figure E.
Returns with Income of $25,000 or More:
Share of All Returns, Income and Tax, 1951-1986

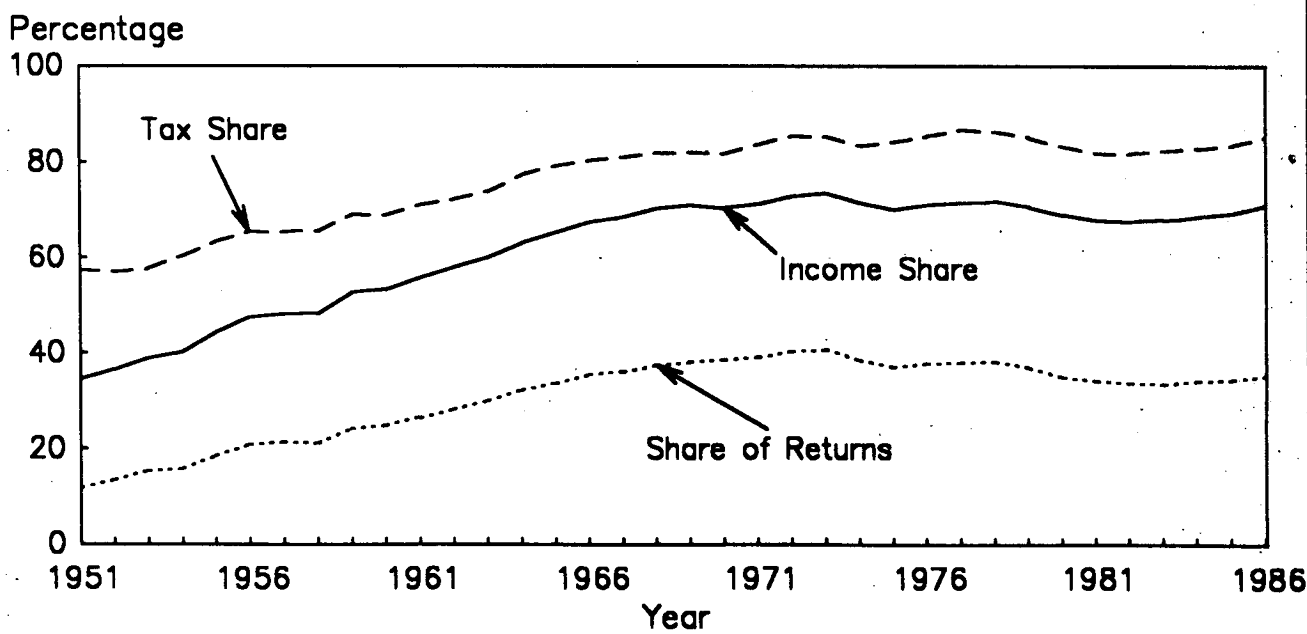


Figure F.
All Returns and Returns with Income of $25,000 or More: Average Tax Rates, 1916-1950

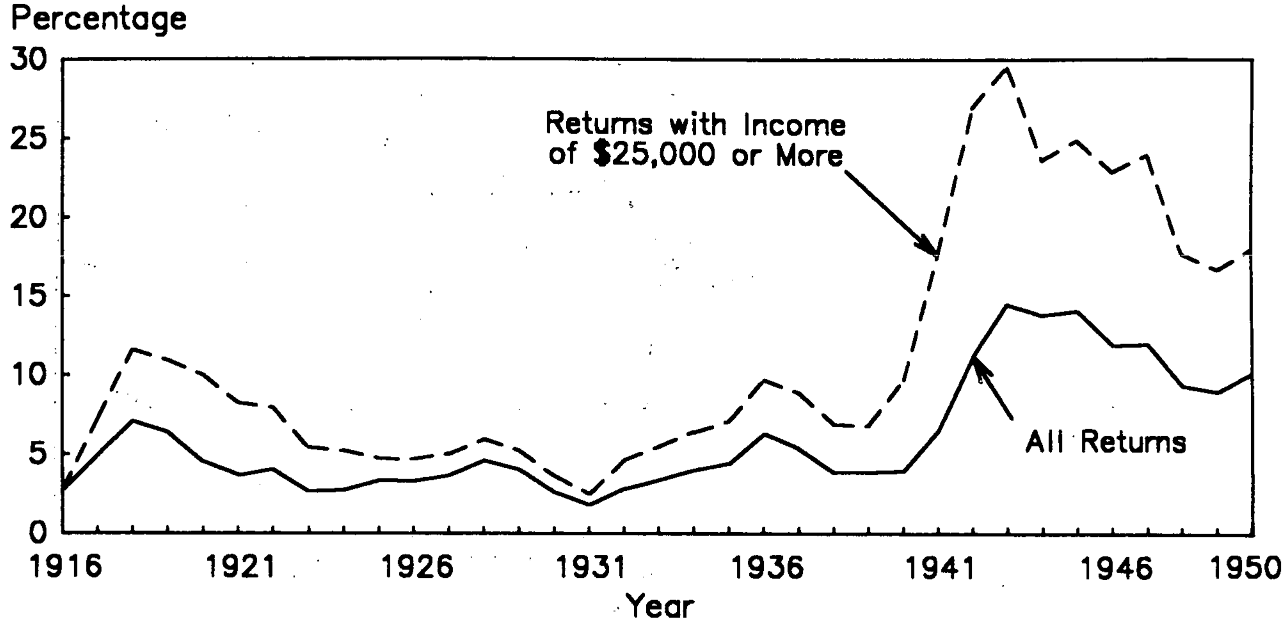
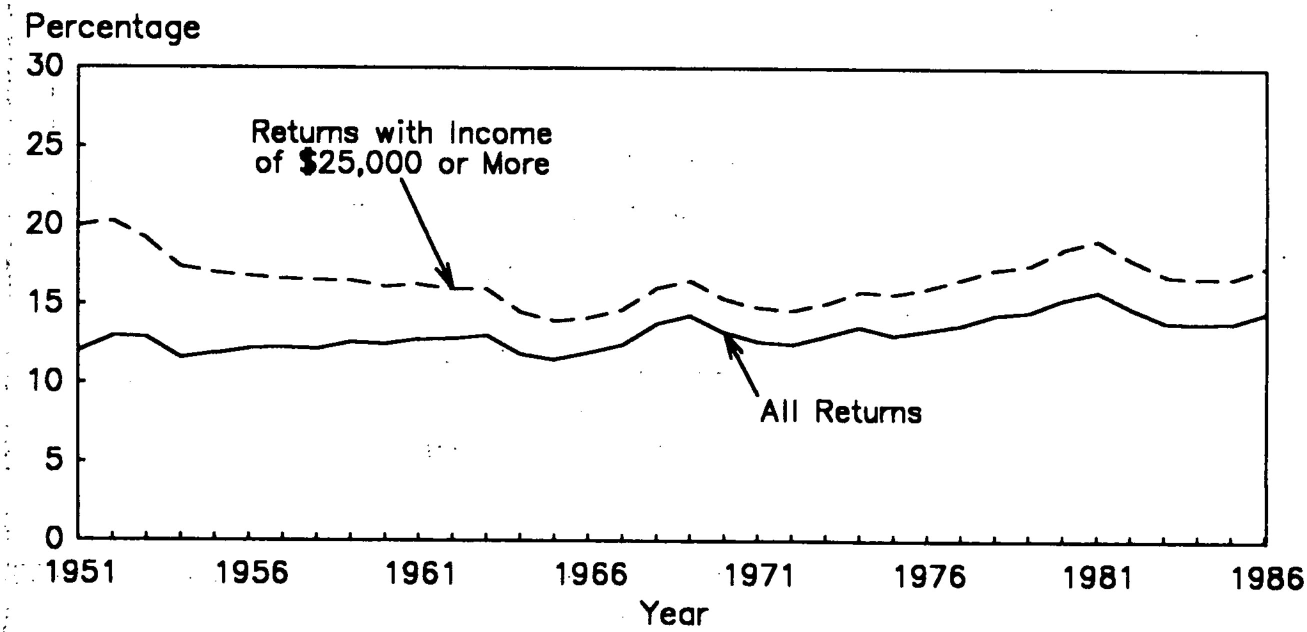


Figure G.
All Returns and Returns with Income of $25,000 or More: Average Tax Rates, 1951-1986



1951 to 1986, but to show how these data relate to the earlier years in the time series. Before proceeding to this brief illustration, three general points should be made:

- Confining attention to returns constituting a fixed percentage of the total U.S. population (as is done in Table 6) may be the best device used in the tables to increase year-to-year comparability; even so, difficulties remain. For example, the number of exemptions generally claimed on returns (an indicator of the number of individuals represented by the returns) may have been changing; this has not been studied as yet.

- Comparisons in Table 6 (and in Tables 2 through 5) are all relative to the base of returns with income of $25,000 or more. For some statistics, like tax shares, this is an extremely important consideration; for others, like tax rates, it does not matter at all.

- Finally, the top 200 returns per 100,000 U.S. population constitute a very small fraction of the income distribution and movements in this upper tail may be different from movements elsewhere; hence, any conclusions about this select group may not apply to the population as a whole.

Tax rates and tax shares were not constant over the 1916 to 1950 period. During the early part of the period, returns in the top 0.2 percent group were subject to very low tax rates, although their share of reported tax was quite high (see Figure H). In the early 1940's, however, tax rates increased sharply, while the tax shares of the group fell. The latter part of the 1916 to 1950 period was generally characterized by falling tax rates and constant tax shares.

In the 1951 to 1986 period, after an increase to 38.52 percent for 1952, average tax rates fell slightly and then were fairly constant, averaging over 34 percent (see Figure I). The tax share of the group declined in most years, from 43.19 percent for 1951 to 15.89 percent for 1981. After 1981, the tax share of the group increased steadily, reaching 23.87 percent for 1986, the highest it had been since 1961 [9].

ONGOING RESEARCH

The value of the data presented here and in the earlier article will be greatly enhanced when some of their limitations are addressed. A report on this work is currently scheduled for publication in an upcoming issue of the *SOI Bulletin*. This section contains a brief overview of those efforts.

Work to mitigate data limitations includes the development and application of a standardized income concept. Tax law changes have resulted in inconsistencies in the income concept over the 1916 to 1986 period. In their current form, the data presented so far are not particularly useful for evaluating changes in the distribution of income, because they have not been adjusted for these changes in the composition of income. (That is one reason why tax shares, rather than income shares, have been emphasized.) As discussed in the previous article, the most serious inconsistency was introduced in (tax year) 1944, when adjusted gross income (AGI) was adopted in place of net income, as the income size classifier. Consequently, data for 1943 and earlier are not precisely comparable to data for later years. Cross-tabulations of AGI and net income are, however, available for a number of years after 1943; these and other data are being used to simulate how the net income distributions for 1944 and thereafter would look [10].

Other inconsistencies in the income concept will be addressed as well; for example, removing capital gains and losses from the computation of net or adjusted gross income would mitigate the problems caused by the many changes in their treatment over time. The data base will also be augmented by the addition of detail regarding the sources of income and deductions for each year.

The use of previously published tabulated data has been emphasized in these first two articles; however, there are also microdata files available for 1960 and most years thereafter. Adjusting for changes in the tax treatment of various items over time would allow for the creation of simulated microdata for earlier years. To accomplish this, the available microdata for a later year would be adjusted so that they conform to the tax treatment applicable to the earlier year for which data are needed; then they would be reweighted to agree with the aggregates tabulated for the earlier year. These reweighted data would serve as microdata for the earlier year.

Work to evaluate the tax and income shares of constant percentiles of the income distribution is now underway. This approach is more appropriate than using the constant dollar income cutoff now employed, because it takes into account real changes in the income distribution. Finally, an analysis of the sensitivity of the estimates to the use of various price indices is planned.

DEFINITION OF TERMS

Three items were obtained from the old SOI volumes for this study: the number of returns, income and tax liability, all distributed by size of income. These terms are defined below, essentially as they were in Part I.

Returns.—Joint returns have been allowed since the inception of the individual income tax. (However, income-splitting, whereby couples pay twice the tax computed on

Figure H.
Returns Accounting for the Top 0.2 Percent of U.S. Population: Federal Income Tax Share and Average Income Tax Rate, 1916–1950

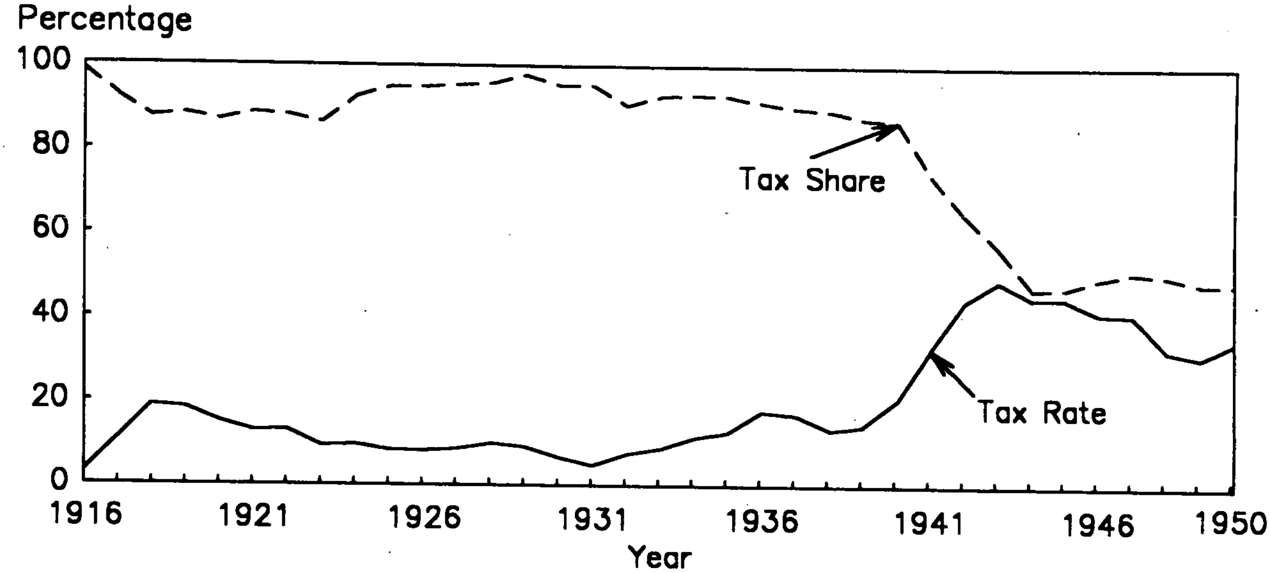
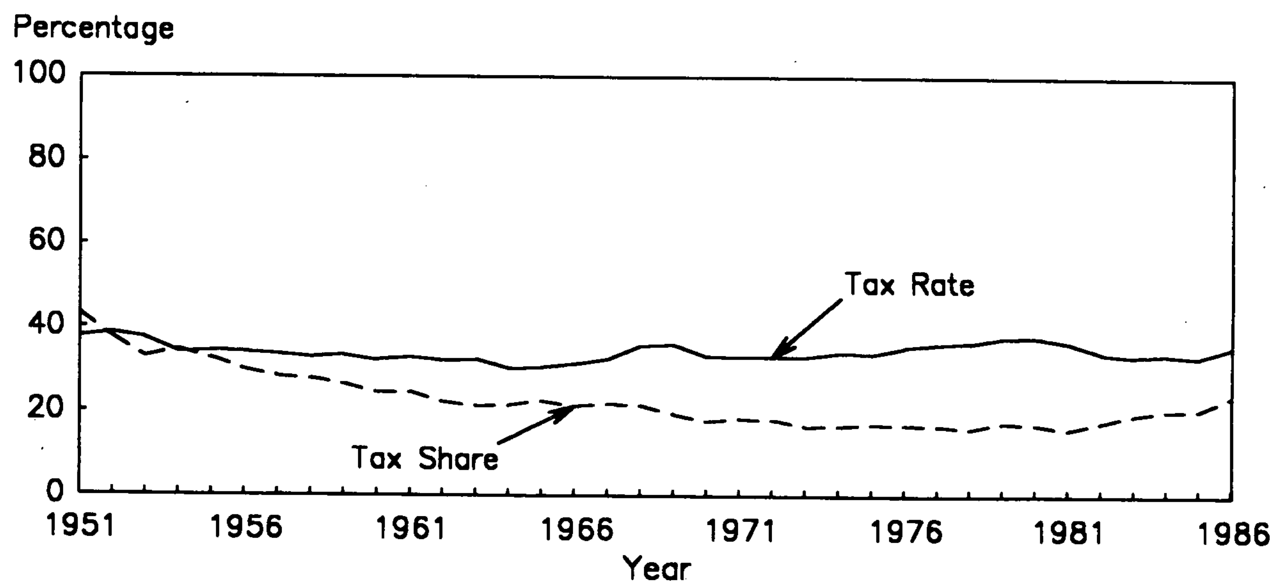


Figure I.
Returns Accounting for the Top 0.2 Percent of U.S. Population: Federal Income Tax Share and Average Income Tax Rate, 1951–1986



one-half of their combined income and thus are subjected to lower tax rates, was not instituted until 1948.) The law also provided for returns for single persons and married persons filing separately. Head of household returns were introduced in 1952 and special returns for surviving spouses were added in 1954 [11]. Figure J provides information on the many changes in the filing requirements that have occurred over the 1916 to 1986 period [12]. An artificial, indexed filing threshold of $25,000 or more in 1986 dollars was introduced to adjust for the fluctuations in the filing thresholds.

Prior to 1928, returns with deficits in income were not tabulated. To preserve the comparability of the data over the entire time series, returns with deficits in Adjusted Gross Income (or net income, prior to 1944) are excluded from data for all years, even though they are available in the original SOI publications for 1928 and thereafter. These omitted returns constitute a very small percentage of total filings—less than 1 percent, for the most part, and this omission does not affect the estimates on Tables 2 through 6 at all.

Income.—The income concept applicable to 1951 through 1986 is adjusted gross income (AGI). Introduced in 1944, AGI is generally defined as gross income less (1) allowable trade and business deductions, (2) travel, lodging and other reimbursed expenses connected with employment, (3) deductions attributable to rents and royalties, (4) deductions for depreciation and depletion allowable to beneficiaries of property held in trust, and (5) allowable losses from sales of property. (Personal deductions, such as those for medical expenses, personal interest paid and charitable contributions, are not subtracted from income until later, when the net income of itemizers is computed.)

The precise definition of AGI did change fairly often during this period, as various tax laws were enacted. The treatment of capital gains and losses was altered the most frequently, although other sources of income were included or exempted from time to time, as well. SOI data suggest that the definitional changes that occurred in the gross income concept did not greatly affect the distribution of returns with income of $25,000 or more in 1986 dollars in the 1916 to 1950 period. However, the increasing frequency of significant tax law changes in the 1950 to 1986 period make these assertions more problematic. As noted in the previous section, research into the construction of an income classifier that is more consistently applicable to the entire data series is underway.

Income Tax.—The computation of the income tax changed repeatedly over the 1951 to 1986 period. In this article, tax refers to the total Federal individual income tax liability less tax credits. The tax includes the normal tax and surtax (called regular tax beginning in 1971), the optional

Figure J.—Income Tax Return Filing Requirements in 1986 Dollars, Tax Years 1916-1986

Year	Married Filing Jointly		Single	
	Net Income	Gross Income[1]	Net Income	Gross Income
	(1)	(2)	(3)	(4)
1916	$ 30,000	N/A	$ 30,000	N/A
1917	17,094	N/A	8,547	N/A
1918	14,599	N/A	7,299	N/A
1919	12,658	N/A	6,329	N/A
1920	10,929	N/A	5,464	N/A
1921	12,270	$ 30,675	6,135	$ 30,675
1922	13,072	32,680	6,536	32,680
1923	12,821	32,051	6,410	32,051
1924	16,026	32,051	6,410	32,051
1925	21,875	31,250	9,375	31,250
1926	21,739	31,056	9,317	31,056
1927	22,152	31,646	9,494	31,646
1928	22,436	32,051	9,615	32,051
1929	22,436	32,051	9,615	32,051
1930	23,026	32,895	9,868	32,895
1931	25,180	35,971	10,791	35,971
1932	20,000	40,000	8,000	40,000
1933	21,186	42,373	8,475	42,373
1934	20,492	40,984	8,197	40,984
1935	20,000	40,000	8,000	40,000
1936	19,841	39,683	7,937	39,683
1937	19,084	38,168	7,634	38,168
1938	19,531	39,063	7,813	39,063
1939	19,685	39,370	7,874	39,370
1940	N/A	15,625	N/A	6,250
1941	N/A	11,194	N/A	5,597
1942	N/A	8,054	N/A	3,356
1943	N/A	7,595[2]	N/A	3,165
1944	N/A	3,125[1]	N/A	3,125
1945	N/A	3,049	N/A	3,049
1946	N/A	2,809	N/A	2,809
1947	N/A	2,451	N/A	2,451
1948	N/A	2,727	N/A	2,727
1949	N/A	2,765	N/A	2,765
1950	N/A	2,727	N/A	2,727
1951	N/A	2,532	N/A	2,532
1952	N/A	2,479	N/A	2,479
1953	N/A	2,459	N/A	2,459
1954	N/A	2,449	N/A	2,449
1955	N/A	2,459	N/A	2,459
1956	N/A	2,419	N/A	2,419
1957	N/A	2,335	N/A	2,335
1958	N/A	2,273	N/A	2,273
1959	N/A	2,256	N/A	2,256
1960	N/A	2,222	N/A	2,222
1961	N/A	2,198	N/A	2,198
1962	N/A	2,174	N/A	2,174
1963	N/A	2,151	N/A	2,151
1964	N/A	2,120	N/A	2,120
1965	N/A	2,083	N/A	2,083
1966	N/A	2,027	N/A	2,027
1967	N/A	1,967	N/A	1,967
1968	N/A	1,893	N/A	1,893
1969	N/A	1,796	N/A	1,796
1970	N/A	6,497[1]	N/A	4,802
1971	N/A	6,233	N/A	4,607
1972	N/A	7,330	N/A	5,366
1973	N/A	6,914	N/A	5,062
1974	N/A	6,222	N/A	4,556
1975	N/A	6,925	N/A	4,786
1976	N/A	6,936	N/A	4,721
1977	N/A	8,499	N/A	5,335
1978	N/A	7,899	N/A	4,958
1979	N/A	8,157	N/A	4,985
1980	N/A	7,181	N/A	4,388
1981	N/A	6,514	N/A	3,981
1982	N/A	6,136	N/A	3,750
1983	N/A	5,941	N/A	3,630
1984	N/A	5,702	N/A	3,485
1985	N/A	5,729	N/A	3,496
1986	N/A	5,830	N/A	3,560

[1] Prior to 1944, the net income and gross income filing thresholds were applied to the combined income of the couple. For 1944 through 1969, the gross income filing criterion applied to income earned by either spouse. Beginning in 1970, the filing criterion again applies to the total gross income of the couple.

[2] Or $3,949 earned by one spouse only, for purpose of the victory tax.

N/A—not applicable.

tax paid in lieu of surtax and normal tax, the alternative tax on capital gains income, the surcharge in effect for 1968 through 1972 and the alternative minimum tax effective in 1970 and thereafter. It does not include self-employment taxes, social security taxes, taxes from recomputing prior-year investment or work incentive credits, or State and local assessments [13].

NOTES AND REFERENCES

[1] Scheuren, Fritz and McCubbin, Janet, "Individual Income Tax Shares and Average Tax Rates, Tax Years 1916-1950," *Statistics of Income Bulletin*, Volume 8, Number 3, 1989.

[2] The Consumer Price Index, produced monthly by the Bureau of Labor Statistics, is a Laspeyres index; that is, it is a ratio of incomes needed in different years to purchase the base year's representative group of goods. For a recently published series, see U.S. Department of Commerce, Bureau of the Census, *Statistical Abstract of the United States: 1988*. The CPI might not be the most appropriate price index to use to convert these data to 1986 dollars, but it was the most readily available index extending back to 1916. A study of the use of alternative indices is planned.

[3] "Income" is adjusted gross income (AGI). (Prior to 1944, SOI data are classified by net income, a less inclusive concept than AGI. This makes comparisons across this year problematic, as discussed in the Ongoing Research section of this article.) The amount $25,000 was chosen because it is roughly the lowest level that can serve as an artificial filing requirement common to all years from 1916 through 1986. In fact, for 1916 and 1931, the net income filing threshold in 1986 dollars for joint returns is actually above the $25,000 cutoff.

[4] The basic approach taken was to employ "spline fitting" procedures to the tabulated income data. For a review of this area of statistical application, see Ramsay, J. O., "Monotone Regression Splines in Action," *Statistical Science*, Vol. 3, No. 4, 1988. For examples of applications of the procedure, see Oh, H. Lock and Scheuren, Fritz, "Osculatory Interpolation Revisited," *Statistics of Income and Related Administrative Record Research: 1986-1987*, U.S. Department of the Treasury, Internal Revenue Service; and Oh, H. Lock, "Osculatory Interpolation with a Monotonicity Constraint," *1977 Proceedings of the American Statistical Association, Section on Statistical Computing*, 1978.

[5] Information on the U.S. resident population was obtained from U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, series P-25; as cited in U.S. Department of Commerce, Bureau of the Census, *Statistical Abstract of the United States, 1988*, December 1987.

[6] Pechman, Joseph A., *Federal Tax Policy* (5th edition), The Brookings Institution, 1987. See also, Pechman, Joseph A., *Who Paid the Taxes, 1966-85?*, The Brookings Institution, 1985.

[7] U.S. Department of Commerce, Bureau of the Census, *Money, Income and Poverty in the United States*, Series P-60.

[8] See U.S. Department of Commerce, Bureau of Economic Analysis, "Relationship Between Personal Income and Adjusted Gross Income: Revised Estimates, 1947-83," *Survey of Current Business*, May 1986, and "Relationship Between Personal Income and Adjusted Gross Income, 1983-85," *Survey of Current Business*, May 1987. For a more recent article on the reconciliation of the Bureau of Economic Analysis measure of personal income with AGI by source of income, see Park, Thae S. and Reeb, Jane S., "Personal Income and Adjusted Gross Income, 1984-1986," *Statistics of Income Bulletin*, Volume 8, Number 3, 1989.

[9] The tax share of this group increased by 16 percent between 1985 and 1986. This unusually large increase reflects the increase in the realization of capital gains income, motivated by the elimination of the preferential tax treatment of such gains beginning with 1987. The recent increases in income and tax shares shown in these data are also reflected in other data from higher-income returns. See for example, U.S. Department of Treasury, "Changes in the Distribution of Federal Income Tax Payments Since 1981," *Treasury News*, April 5, 1988.

[10] See Scheuren, Fritz and Oh, H. Lock, "Constant Income Distribution Percentile Estimation," *Statistics of Income and Related Administrative Record Research*, Internal Revenue Service, to be presented at the August 1989 meetings of the American Statistical Association.

[11] Head of household returns were allowed for tax years beginning after October 31, 1951. Under this new filing classification, heads of households received approximately half of the income-splitting benefits accorded to a married couple. The 1954 Internal Revenue Code extended the full benefits of income splitting to widowed individuals, for two years following the death of a spouse, provided that the surviving spouse had not remarried and had a dependent child or stepchild.

[12] Higher filing requirements than those noted in Figure J were introduced for aged individuals in 1954 and for widowed individuals in 1975. A lower filing requirement applicable to self-employed individuals was introduced in 1951, to facilitate the collection of their social security taxes. See the first article in this series, Scheuren, Fritz and McCubbin, Janet, "Individual Income Tax Shares and Average Tax Rates, Part I: 1916–1950," *Statistics of Income Bulletin*, Winter 1988–89, for more detailed information on the operation of the filing requirements during 1916 to 1950.

[13] The self-employment tax (mandated by the Social Security Act Amendments of 1950) is included in the income tax data for 1951 through 1953. This inconsistency is not a serious problem as the self-employment tax constituted less than 1 percent of the total tax in each year, and well over half of the self-employment tax was reported on returns with less than $25,000 or more in 1986 dollars.

Editors' Note:
The six basic tables described on pages 87 - 88 of this paper have *not* been reprinted here. The reader is referred to the full paper, including tables, in the *Statistics of Income Bulletin,* Vol. 8, No. 4., 1989, Internal Revenue Service, pp. 39-74.