

70TH YEAR OF STATISTICS OF INCOME

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Since enactment of the modern income tax in 1913, statistics based on information reported on Federal tax returns filed by U.S. individual taxpayers have been made available to the public. These detailed income and tax statistics have been published since 1916 as annual Statistics of Income (SOI) reports. Although the focus of this paper is on the individual income tax return program, much of the material is relevant to the development of other SOI programs as well.

Organizationally, the paper is divided into eight parts. The first part provides a summary of the beginnings and the history of SOI as seen in the development of one of its principal programs. The next part covers major law changes affecting the scope of the Federal individual income tax and its revenue yield. Sections 3 to 5 highlight statistics which show the tremendous growth in return filings, the change in the amount and composition of income, and the historical pattern of the average tax rate. The two sections which follow examine changes in statistical data sources, methodology and processing. Finally, there is a brief look at the new directions envisioned for the processing of, and the products generated from, the SOI Programs.

1. BACKGROUND AND HISTORY

After an 18-year lapse in Federal income taxation, the Sixteenth Amendment to the Constitution became effective on February 25, 1913. This amendment provided that:

"...Congress shall have the power to lay and collect tax on incomes, from whatever sources derived, without apportionment among the several States, and without regard to any census or enumeration."

Shortly thereafter, on October 3, the Income Tax Act of 1913 was enacted and imposed a tax (retroactive to March 13) on the income of both individuals and corporations.[1] The only data for the period March to December 1913 show that there were fewer than 400,000 tax returns filed which met the \$3,000 minimum income filing requirement. The income tax for 1913 amounted to about \$28 million. In its first full year of operation income tax rose only to \$41 million--a far cry from the 1982 income tax before credits figure of \$284 billion.

On September 8, 1916, Congress enacted the Revenue Act of 1916 which, in addition to various tax measures, provided for:

"... the preparation and publication of statistics reasonably available with respect to the operation of the income tax law and containing classifications of taxpayers and of income ...and any other facts deemed pertinent and valuable ..."[Underlining added to indicate how the program name may have arisen.]

Reports were to be made annually by the Commissioner of Internal Revenue with the approval of the Secretary of the Treasury.

The initial volume of the annual Statistics of Income (SOI) series contained detailed data for Income Year 1916, as well as the few statistics for 1913-1915 shown in Figure A.

Figure A.--Returns, Income and Tax, 1913-1915

Income Year	Number of Returns	Net Income (millions)	Income Tax (millions)
1913	357,598	\$3,900	\$28
1914	357,515	\$4,000	\$41
1915	336,652	\$4,600	\$68

During the early years of the Statistics of Income, the individual income tax tabulations were few in number and relatively uncomplicated. Until the late 1920's the individual income statistics particularly emphasized the tax, the size of income producing the tax, and where the returns were filed. A major portion of each book related to geography. Not only were there State tables showing number of returns, income, and tax, classified by size of income, but the number of returns for each county, city, and town were available for 21 years.

As numerous Congressional, Federal, State and private economic research organizations were created, and as the needs of tax administrators and the estimators of future tax revenue grew, requests were received for new data showing many detailed characteristics of the income of all persons in the United States. Consequently, by the early 1930's the Statistics of Income had developed gradually into a leading source of basic economic data. For example, in response to a need for more detailed income statistics, not only for use in tax research but also as benchmarks for Commerce's National Income and Products Accounts, two voluminous studies were conducted principally for the years 1934 and 1936. These studies were produced under the direction of the Treasury's Division of Tax Research (the predecessor of the Office of Tax Analysis) and financed by the Works Progress Administration (WPA). These manually compiled, handwritten tabulations featured extensive individual and corporate data by income size and geographic area. (The worksheets were recently converted to microfilm for ease of accessibility by researchers.) The design of these tabulations became the prototype of tables which were presented annually or periodically in the reports during the 1950's and 1960's.

By Income Year 1946 the SOI reports had increased to fourteen basic tables, largely through the introduction of cross-tabulations. New data added along the way covered such items as detailed sources of income (including gain

from sales of capital assets), standard and itemized deductions (included types of itemized deductions), number of exemptions and tax payments. New classifiers included size of specific income sources and net income.

The introduction of computers in Statistics of Income processing in 1954 was perhaps the most significant technological change in its 70-year history. The tremendous increase in the volume of returns statistically processed (even with sampling), coupled with the increased complexity of the tabulations, had caused the issuance of the reports to be greatly delayed in the 1940's. (For example, the 1949 Individual report was released in 1954.) While not the sole reason, the use of computers contributed importantly to the reduction in the "publication gap" (the 1959 Individual report was released in 1961).

In more recent years the SOI reports have shown a further increase in the number of basic tables. For instance, added detail is shown for number of returns filed, sources of income, marital status and taxable and nontaxable returns. There is more information for types of dependents, types of tax computation and for several types of tax credits. Examples of items more recently added are statutory adjustments to income and minimum tax. New classifiers include taxpayers age 65 and over, marginal tax rates and alternative income concepts (data for which are specifically required by Congress). Data from tax return schedules are also being tabulated. These data include income averaging, tax preferences, residential energy investments and energy investment credit.

Today, individual income tax return data, as well as other tax return statistics produced as part of Statistics of Income program, serve as keystones to economic analysis for both the public and the private sectors. Among the users of SOI are the Treasury Department's Office of Tax Analysis, the Joint Committee on Taxation of the U.S. Congress, the Bureau of the Census and Bureau of Economic Analysis (both in the Department of Commerce), private non-profit research organizations, universities and businesses, as well as many State and local government agencies.

In the future, as more and more researchers have access to computers of their own, many of the SOI statistics will be provided in the form of computer readable output, rather than in the form of tabulations in SOI publications.

2. CHANGES IN THE LAW

The growth in the number of returns filed and the amount and types of income reported, as well as the sharp increase in the yield of the individual income tax since 1913 have resulted primarily from: changes in the law, long-term growth in the U.S. population, real growth in the economy and price inflation.

In general, increased demands for additional revenues to finance World War I, World War II, and the Korean conflict caused rapid and numerous changes in the tax law. The most drastic revisions occurred in the early 1940's; however, prior to 1940 many important tax law

changes also occurred. Some of these changes were elimination of collection of taxes at the source (1916), credit for dependents and deduction for charitable contributions (1917), and adoption of preferential tax rates on long-term capital gains and introduction of the gross income filing requirements (1921). In addition, in 1939, for the first time all revenue laws were incorporated into a single body which came to be known as the Internal Revenue Code.

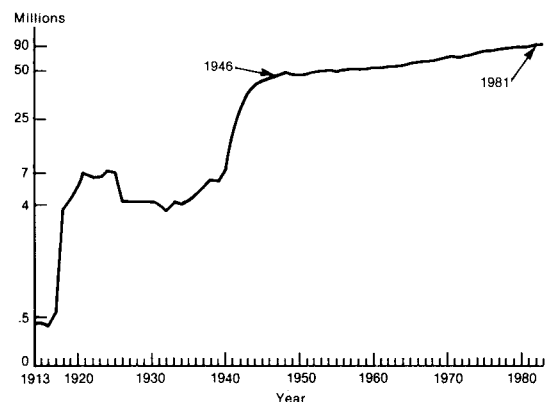
In the early 1940's revisions to the law occurred when the individual income tax was broadened to cover most of the working population. During the 1960's and throughout the 1970's there were several tax law changes affecting individuals which, in addition to revenue objectives, reflected a concern with social objectives.

The beginning of the decade of the 1980's again shows an emphasis on revenue objectives. For example, there were a series of tax cuts introduced by the Economic Recovery Tax Act of 1981; the thrust of these, however, was to lessen the individual tax burden, rather than to increase it.

3. NUMBER OF RETURNS

As shown in Figure B, the number of returns filed prior to 1940 ranged from approximately 300 thousand to 7 million. However, with the introduction of lower income filing requirements for 1940, the number of returns filed doubled to more than 14.7 million. By 1946 the number of returns had reached more than 50 million and by 1950 the number was slightly more than 53 million. During each of the decades of the 1950's and 1960's the number increased by an average of approximately 10 million returns. For Tax Year 1973 the number of returns passed 80 million and rose to over 93 million for the first time for 1980.

Figure B
Number of Individual Returns, 1913-1982



1946 — The first year that the number of returns filed passed the 50 million level at over 52.8 million

1981 — The number of returns filed reached an all-time high of 95.3 million

For Income Year 1982, estimates for the number of returns filed showed only a very slight decline to 95.3 million from the all-time high of 95.4 million reached for 1981.[2] The current level of return filings is more than twice the number of returns filed for 1943 which was the first year of the current system of income tax withholding on wages and salaries.

Over the 70-year history of the modern individual income tax the proportion of returns with income tax before credits has also changed. Prior to the broadening of the individual income tax base in the early 1940's, the percent of taxable returns ranged from a high of approximately 83 percent for 1916 to a low of about 44 percent during the depths of the Great Depression year 1934.

During World War II, the highest percentages of taxable returns ever recorded were experienced when, for both 1943 and 1944, more than 90 percent of all individual returns filed were taxable. In more recent years, for 1968 and 1969 the percentages climbed to the second highest levels ever experienced--83 and 84 percent, respectively. Estimates for Income Year 1982 show the percent of taxable returns remaining about the same as for 1981--at approximately 80 percent.

The percent of the total U.S. population represented on tax returns has increased quite dramatically over time. For instance, for 1918 approximately 10 percent of the population was represented by a taxpayer or a dependent on an individual income tax return. The percent remained relatively low until the broadening in the coverage of individuals having to file returns that occurred in the early 1940's. By 1946, more than 87 percent of the population was covered. In the 1950's, the percentage grew still further, then stabilized at where it stands today--at approximately 90 percent of the population. It is because of this widespread representation of the U.S. population on individual tax returns that the idea of using tax records has surfaced as a possible viable alternative to the traditional ways of conducting the decennial population census.

4. TRENDS IN INDIVIDUAL INCOME

Since 1944, the Statistics of Income reports have presented yearly data centered around the concept of adjusted gross income--positive sources of income less negative amounts and statutory adjustments. Prior to then, the statistics centered around the concept of net income--positive sources of income less negative amounts and allowable deductions. Because of this conceptual difference it is difficult, but not impossible, to make any direct and meaningful long-run income comparisons. However, for the entire 70-year period of the individual income tax, a concept of "total income"--positive sources less negative amounts (as provided for under the tax law for the particular year)--can be constructed [3].

As expected, the total income reported in current dollars on all individual returns has

grown dramatically during this century from about \$20 billion for 1919 to almost \$2 trillion for 1982. During the Depression, however, there was a long period when total income declined. For example, for 1928 the total income reported on returns was approximately \$27.3 billion. During Income Year 1929, the nation experienced the stock market crash and huge losses of \$1.8 billion (associated with the sale of real estate, stocks and bonds) were reported. For that year total income dropped to \$26.6 billion and continued on a downward trend, as the Great Depression progressed, to a low point of \$10.6 billion for 1932. During the rest of the Depression total income reported grew rather slowly and only by 1939 did it again surpass \$25 billion.

Because of the dramatic increase in the number of returns filed during the 1940's, by 1945 the total income had increased to \$120 billion. Over the next fifteen years, total income grew steadily and reached more than \$316 billion for 1960. During the decade of the 1960's, total income doubled again; and, with the rapid inflation of the 1970's and early 1980's, it grew even more to over three times the level of the late 1960's.

Changes in Real Total Income

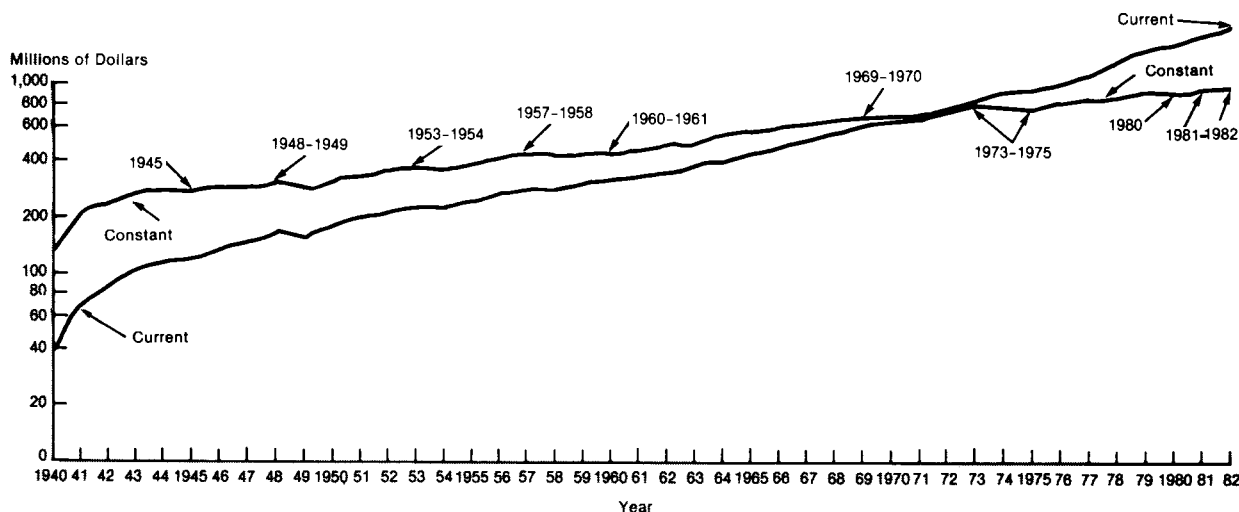
Presented below in Figure C for selected years is the total income in constant dollars adjusted for inflation [4] compared to the current dollar total for the same year.

Figure C.--Total Income for Selected Years, 1929-1982

Selected Income Year	Total Income	
	Current Dollars (millions)	Constant (1972) Dollars (millions)
1929.....	26.7	61.1
1930.....	17.0	38.0
1935.....	12.2	38.6
1940.....	40.2	130.0
1945.....	120.0	272.1
1950.....	179.1	314.9
1955.....	249.0	386.7
1960.....	316.1	439.7
1965.....	432.3	560.0
1970.....	639.4	691.2
1975.....	962.9	769.1
1980.....	1,642.3	916.5
1981.....	1,804.0	927.5
1982.....	1,917.0	930.6

An examination of the data shows that the 15-fold real growth in total income over these 54 years is consistent with, but less staggering than, the 72-fold growth rate in the current dollar total. The constant-dollar total income in the Great Depression of the 1930's declined in the same pattern as current-dollar total income and reached a low point of \$38.2 billion for 1932. However, unlike the current-dollar totals, real growth in total income was more

Figure D.
Current and Constant Dollar Total Income, 1940-1982
(1972 = 100)



rapid because of falling prices. By Income Year 1937 the constant dollar total had passed the pre-Depression level of \$74.3 billion. Furthermore, for the 11-year period of 1929 to 1939, there was a 12 percent real growth in total income in contrast to a very small decline in the current dollar total.

Generally, growth in real total income reported on individual income tax returns has continued at a steady pace over the years since 1940 (see Figure D). However, unlike the current dollar total for each year, which over the last 43 years has experienced only one downturn from the previous year (1949), the pattern of change in the constant-dollar total income has generally coincided with the expansion and contraction of the U.S. economy.

For each of the nine time periods highlighted in Figure D, the U.S. economy experienced the end of a business cycle expansion, the beginning and ending of a recession and the beginning of a new period of growth. As shown during each of the periods the growth in real total income reported on individual returns was flat or in decline. This pattern of change in real total income was especially prevalent in the 10-year period ending with 1982, during which time the economy experienced three economic downturns, in 1973-1975, 1980 and 1981-1982.

During the recession of 1973-1975, real total income dropped by 0.3 percent for 1974 and by 2.6 percent for 1975; and in the recession of 1980 total income dropped slightly (0.1 percent) from the 1979 total. For the most recent recessionary period of 1981-1982 there was a very slow growth rate of only about 1.2 percent for 1981 and about 0.2 percent for 1982. However, despite this slow growth, real total income reported on individual income tax returns reached an all-time high for Income Year 1982.

5. INCOME TAX AND AVERAGE TAX RATE

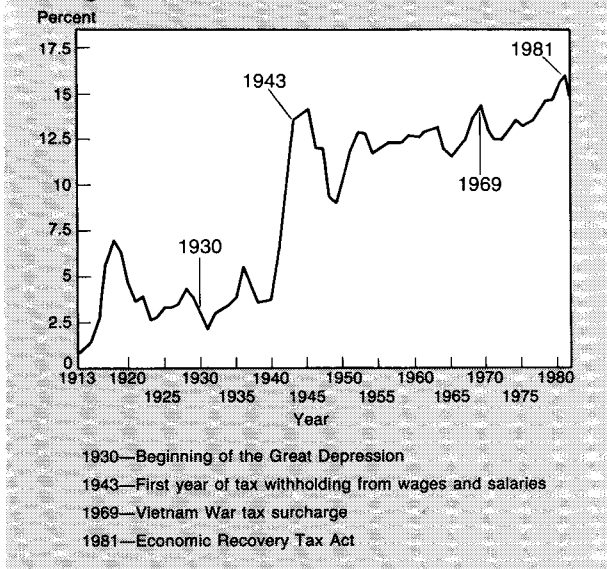
The Statistics of Income reports have presented yearly statistics dating back to 1913 on income tax before credits (as defined under the tax law for the particular year). In general, during the first 23 years (1913-1940), the total income tax before credits shown on the returns tabulated in SOI fluctuated (because of the effect tax law changes and economic events had on total income) between approximately \$28 million and \$1.3 billion.

However, beginning with the growth of individual income in the 1940's total income tax before credits rose almost steadily, peaking for 1981 at more than \$290 billion. For 1982, total income tax before credits dropped by approximately \$6.3 billion, largely reflecting the tax cutting provisions of the Economic Recovery Tax Act of 1981.

Along with the historical increase in total income tax before credits there was also steady increase over the past 70 years in the "average individual income tax rate" [5] (see Figure E). The many different economic events and tax law changes which affected both the definition of income reported on a tax return and the calculation of tax before credits on this income have, naturally, caused the rate to fluctuate between less than 1.0 percent for 1913 and 16.0 percent, the all-time high, for 1981. However, since the mid-1960's the effect of inflation or "bracket creep" was an important economic event which caused the average rate to increase.

This phenomenon of bracket creep was caused by the fact that, under the U.S. graduated system of taxation, income increases, intended to compensate workers for rising living costs, pushed taxpayers into higher tax brackets with the result of both larger total and average tax burdens for individuals. This continued

Figure E
Average Individual Income Tax Rate, 1913-1982



increase in the average tax rate occurred despite several tax lowering measures, such as the general tax credit which was given to taxpayers for each of the years 1975 through 1978 and the 1.25 percent rate reduction credit for 1981 (which was the first of several tax cuts introduced by the Economic Recovery Tax Act of 1981). The drop in the rate to 14.9 percent for 1982 reflects the first full year of the tax-cutting provisions of the Act.

6. DATA SOURCES

Throughout the history of the Statistics of Income data series for individuals the data for the most part have been based on stratified probability samples of unaudited individual income tax returns. The use of systematic stratified sampling was introduced as early as the 1925 Statistics of Income report. Its use is indicated in this portion of the text excerpted from the 1925 volume:

"...In addition, a fair average sample of the returns filed by persons having net income of less than \$5,000 approximating 250,000 returns are sent in to the Bureau by the 64 collectors' offices and are analyzed for information bearing on this income class, the data fairly representing the distribution of income of all the returns filed having net income of less than \$5,000".

This was, so far as is known, one of the first uses of stratified sampling in a major Federal statistical program.

The largest number of returns included in the SOI sample for any one year was 1.1 million for 1948. Today, with the mix of sophisticated automatic data processing, better statistical techniques and recent budgetary constraints,

the size of the sample has fallen to around 100,000 returns.

The aggregate number of returns and money amounts shown in the early Statistics of Income reports are undoubtedly different from those that were actually reported on all individual income tax returns filed. These reports did not contain data from deficit returns (deductions exceeded gross income) because the emphasis of Statistics of Income was on net income and whether the returns were taxable or nontaxable (exemptions exceeded net income). Data from all individuals returns filed were not included in SOI until 1928.

In addition, prior to 1937 the income of an estate or trust which yielded a tax for which the estate or trust was liable (usually income received while the estate was being settled or income from a trust which was not yet distributed to beneficiaries) was required to be filed on an individual return, Form 1040. The tax rates were the same as for individuals and a separate Form 1041 was not used for this purpose until 1937. Consequently, for 1916-1936, data for individuals and estates and trusts with net income were all combined (though labelled as "individual returns") and they were not separated in the statistics.

7. STATISTICAL PROCESSING OF INDIVIDUAL INCOME TAX RETURNS

The processing of individual income tax returns for statistical purposes has grown from the laborious manual operation of the first five decades to a fully computerized system in the 1980's. In the context of this paper is worth noting some of the years in which these procedural changes were made.

Electronic Accounting Machine (EAM) equipment was used for SOI processing beginning as early as the 1920's; and, in 1954, IRS (working at the Census Bureau) first employed a computer for their statistical work (although basically only for tabulations). [6]

The concept of a "Master File" (transcribing to tape most of the information supplied on the tax return) was first applied to IRS processing in the late 1950's, and became operational nationwide in the 1960's. When the use of automatic data processing became operational in all IRS regional service centers, computer designation of the statistical samples commenced with the 1966 Tax Year individual return SOI program.

It was not until 1974, however, that it was considered practicable to use for statistical purposes data which had been recorded for "Master File" purposes. Now, almost 90 percent of the data elements in the individual tax return SOI program are obtained directly from the "Master File" with only the remaining 10 percent separately edited.

8. NEW DIRECTIONS FOR THE SOI PROGRAMS

The new directions envisioned for the SOI Programs can be broadly categorized into two areas: (1) processing innovations, and (2) product reshaping.

With respect to processing, the SOI Programs are utilizing (as fast as practicable) the improved systems equipment and operations being introduced for regular IRS processing. One example, which should impact significantly on SOI processing costs and timeliness, is the use of on-line error resolution in a real time environment. This replaces the traditional laborious, after-the-fact checking procedures which were often done without the source documents on hand.

In the area of statistical products, it is expected that the focus of the SOI Programs will move away from the more traditional annual and supplemental reports to a broader concept of "user services," taking advantage of less complicated, more efficient hardware coupled with the ever increasing variety of statistical software.

ACKNOWLEDGMENTS

This paper excerpts material which was gathered for the commemoration of the first 70 years of the Statistics of Income (SOI) Program and which was later used as the basis for a Statistics of Income Bulletin article entitled "70th Year of Individual Income Tax Return Data," by David Paris and Cecelia Hilgert. Additional detail in the form of historical charts and tables is available in that article. All of the authors wish to express their appreciation to Clementine Brittain and Cathy Robinson for their efforts in the typing and copy preparation of the material used for this paper.

NOTES AND REFERENCES

- [1] The American Way in Taxation: Internal Revenue, 1862-1963, ed. Lillian Doris (Englewood Cliffs, 1963).
- [2] Preliminary Income Year 1983 estimates show that the number of returns being filed is

up from the 1981 figure to 97.0 million and projections are for continued growth.

- [3] For each Tax Year, the total income figure computed for the year was derived from the data shown in the applicable SOI report. This was accomplished by adding the positive amounts of income less the net loss amounts of income. The total amount of "net income" shown in the SOI reports prior to 1944 differs from the total income amount for the same years shown in this article. In the original SOI reports prior to 1944, allowable deductions were subtracted from the total income in arriving at net income.

In addition, the total amount of adjusted gross income (AGI) shown in the SOI reports since 1944 also differs from the total income amount shown in this article. In the SOI reports since 1944 statutory adjustments were subtracted from total income in arriving at AGI. Statutory adjustments include, but are not limited to, such items as the moving expense adjustment, employee business expenses and the sick pay exclusion. See the applicable SOI report for those statutory adjustments allowable in a specific year.

- [4] The adjustment used was the implicit price deflator for personal consumption expenditures. See U.S. Department of Commerce, Bureau of Economic Analysis, The National Income and Product Accounts of the United States, 1929-76, September 1981 and Survey of Current Business, July 1982.
- [5] The average individual income tax rate is defined as the ratio of total income to income tax before credits.
- [6] Duncan, Joseph and Shelton, William, Revolution in United States Government Statistics, 1926-1976, U.S. Department of Commerce, Office of Federal Statistical Policy and Standards, 1978.