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IMPACT OF THE INCOME TAX ON SOCIO-ECONOMIC GROUPS OF FAMILIES IN THE UNITED STATES[1]

by Selma F. Goldsmith

TAX incidence in the United States has generally been studied in terms of the full universe of families or taxpayers classified by income brackets. However, a very substantial set of data exists for the postwar period cross-classifying families not only by size of annual family income but also by numerous socio-economic characteristics, such as major occupation, sex, and age of the family head, farm/non-farm residence, size and type of family. These data have been made available by the Bureau of the Census of the United States Department of Commerce through its annual Current Population Surveys in which information on family composition and family income is collected from a large and representative sample of the population. In addition to providing a cross-section view of the families comprising the various income groups, the Census Bureau statistics in conjunction with other related materials make it possible to prepare rough estimates of the distribution of tax liabilities among major population groups.

Because information on the socio-economic composition of income groups is of particular importance in appraising the redistribution of income – which is the subject of this session of the Conference – the first section of this paper summarizes the types of families comprising the various income groups in the United States at the present time, and the changes in composition that have occurred over the past twenty-five years. The second section of the paper presents estimates of the impact of the Federal individual income tax on family incomes, first, in terms of the overall family income distribution, and then separately for selected broad socio-economic groups.

I. A CROSS-SECTION VIEW OF FAMILY INCOMES

In Table I a summary is presented of selected Census data relating to the socio-economic composition of the various broad income groups in 1959. The top section of the table summarizes

[1] The views expressed in this paper are the author's, and are not necessarily those of the Bureau of the Census with which she is associated.

the information for families and unrelated individuals, and the balance of the table refers to families only.

A family is defined as a group of two or more persons related

TABLE I

Families and unrelated individuals comprising various income groups: 1959

Selected characteristics	Total	Total money income of family: Under $3,000	$3,000 to $5,000	$5,000 to $8,000	$8,000 to $10,000	$10,000 and over
	Families and unrelated individuals					
Number of families and unrelated individuals – thousands	55,764	17,755	11,762	15,661	4,904	5,682
Total	100·0	100·0	100·0	100·0	100·0	100·0
Families	80·8	57·5	83·7	93·9	97·2	97·3
Unrelated individuals	19·2	42·5	16·3	6·1	2·8	2·7
	Families					
Number of families – thousands	45,062	10,213	9,842	14,706	4,768	5,533
Age of family head						
Total	100·0	100·0	100·0	100·0	100·0	100·0
14 to 24 years	5·1	7·5	8·4	4·1	1·9	0·5
25 to 34 years	20·4	13·9	23·2	26·8	19·5	11·2
35 to 44 years	24·3	14·7	23·0	27·7	32·0	29·0
45 to 54 years	21·3	16·1	18·4	21·2	27·1	31·1
55 to 64 years	15·2	15·9	14·8	13·3	13·6	20·9
65 years and over	13·7	31·9	12·3	7·0	5·9	7·1
Median age	45·1	53·6	43·0	41·9	43·9	48·0
Size of family						
Total	100·0	100·0	100·0	100·0	100·0	100·0
2 persons	32·2	50·7	32·3	25·2	24·2	23·2
3 perons	21·6	18·8	22·6	22·7	22·6	21·8
4 persons	20·3	11·6	20·0	23·9	24·7	24·1
5 persons	13·2	7·9	11·8	15·5	15·9	17·2
6 persons	6·5	4·5	6·7	7·0	6·8	8·1
7 persons or more	6·1	6·6	6·6	5·7	5·8	5·7
Average (mean) number of persons	3·68	3·27	3·68	3·83	3·85	3·91
Number of related children 18 years of age in family						
Total	100·0	100·0	100·0	100·0	100·0	100·0
No children	40·1	51·7	37·2	33·7	37·1	43·1
1 child	19·7	17·3	20·5	20·3	20·6	20·0
2 children	18·7	12·1	19·3	22·3	21·7	17·8
3 children	11·5	8·0	11·4	13·4	12·5	12·2
4 children	5·3	4·8	5·9	5·8	4·7	4·3
5 children	2·4	2·5	2·9	2·4	2·2	1·9
6 children or more	2·3	3·6	2·7	2·0	1·2	0·8
Average (mean) number of children	1·40	1·20	1·49	1·54	1·39	1·24

TABLE I – Continued

Selected characteristics	Total	Total money income of family				
		Under $3,000	$3,000 to $5,000	$5,000 to $8,000	$8,000 to $10,000	$10,000 and over
Type of family						
Total	100·0	100·0	100·0	100·0	100·0	100·0
Male head	90·0	76·3	90·4	94·9	95·9	96·7
Married, wife present	87·3	72·8	87·1	93·0	93·1	94·3
Wife in paid labour force	25·0	12·6	20·1	27·7	41·3	35·3
Wife not in paid labour force	62·3	60·2	66·9	65·3	51·8	59·0
Other marital status	2·7	3·6	3·3	1·9	2·8	2·4
Female head	10·0	23·7	9·6	5·1	4·0	3·3
Residence						
Total	100·0	100·0	100·0	100·0	100·0	100·0
Urban	61·3	50·4	59·3	64·4	68·6	70·2
Rural non-farm	30·3	29·8	31·5	31·8	28·7	26·3
Rural farm	8·4	19·8	9·2	3·8	2·7	3·5
Occupation of family head						
Total	100·0	100·0	100·0	100·0	100·0	100·0
Proprietors, managers, professional and technical, workers:						
Self-employed	7·5	4·0	5·8	6·6	7·8	18·4
Salaried	13·7	2·1	6·9	14·3	24·8	35·1
Farmers and farm managers	5·2	12·8	5·7	2·1	1·2	2·0
Clerical and sales workers	10·6	3·1	10·2	14·1	14·9	11·8
Craftsmen, and operatives	30·8	12·9	35·4	42·2	36·9	20·8
Service workers[1]	5·8	8·1	7·1	5·4	3·8	2·5
Labourers, except mine	5·3	7·7	7·7	4·4	1·9	1·6
Not in labour force or in Armed Forces	17·6	43·4	16·3	8·1	6·2	6·9
Unemployed in March 1960	3·7	6·0	4·9	2·7	2·4	1·1

[1] Including private household workers.

Source: Derived from Bureau of the Census, U.S. Department of Commerce, 'Income of Families and Persons in the United States: 1959', *Current Population Reports*, Series P-60, No. 35.

by blood, marriage, or adoption and residing together. The income of the family is the combined total received by all family members during the calendar year. An unrelated individual is a person (other than an inmate of an institution) who is not living with any relatives.[1] The term 'consumer unit' is

[1] Families and unrelated individuals together account for the total civilian non-institutional population of the United States plus members of the Armed Forces (and their families) living off post or with their families on post in the United States.

used to cover both families and unrelated individuals.

Income is defined as the total money amount received as cash wages and salaries, net income (after expenses) from self-employment, and cash income from other sources, such as dividends, interest, net rental income, social security and unemployment benefits, private pensions, public assistance, and periodic contributions for support received from persons not residing in the same household. The income data represent amounts received before deductions for personal income taxes, employee contributions for social security, bond purchases, union dues, etc. Receipts from the following sources are not included as income: the value of income 'in kind', such as food produced and consumed on the farm or free living quarters; money received from sale of property, unless the recipient was engaged in the business of selling such property; withdrawals of bank deposits; money borrowed; tax refunds; gifts and lump-sum inheritances or insurance payments.

A. *Unrelated individuals*

About 10½ million, or one-fifth of the 56 million consumer units in the United States are unrelated individuals, i.e. persons not living with any relatives, who maintain their own household, or live as lodgers with private families or in rooming houses, hotels and the like. This population group is much more highly concentrated in the lower range of the income scale than are multi-person families. In 1959 unrelated individuals accounted for over 40 per cent of the consumer units with incomes under $3,000 and for more than 60 per cent of those in the range under $1,000. In contrast, they represented less than 3 per cent of the consumer units in income brackets above $8,000.

In interpreting these figures, account must be taken of the fact that the characteristics of unrelated individuals differ markedly from those of families. Aside from the existence of only one claimant on the individual income as contrasted with the two or more claimants on family income, unrelated individuals consist to a very large extent of relatively old and relatively young persons. Thus, about one-third of the group are persons 65 years old and over and another one-tenth are less than 25 years of age. The low incomes of these groups frequently reflect the smaller economic requirements of retired persons (which are supplemented in some instances by accumulated savings), or sometimes represent simply the lower earnings of young persons who are at the start of their working careers.

B. *Time reference in classification scheme*

Also to be noted in appraising the income data for unrelated individuals is a limitation of the classification scheme which imparts some downward bias to the income distribution, and which also affects the family statistics, though to a lesser extent. The classification of persons into families and unrelated individuals is made as of a point of time, namely, the date of the survey which was in early March of 1960 in the case of Table I. The income data, on the other hand, refer to the calendar year 1959, but pertain to the persons comprising the consumer unit in the following March. An individual who was a non-earning dependent member of a family during all or most of 1959, but who established himself as a separate 'unrelated individual' early in 1960, would probably appear in the lowest income group in Table I, whereas his actual full-year income status might entitle him to a higher income ranking on a hypothetical 'full-year-equivalent' scale.

Young persons who found their first jobs late in the year, and moved away from home, exemplify this type of situation. Similarly, older persons dependent during all or most of the calendar year on a spouse who died prior to the date of the survey and whose income was therefore not recorded, impart a downward bias to the income distribution, except in certain instances such as the disappearance of the consumer unit as a result of the death (e.g. the widow moved in with other relatives).

It may be noted that some counteracting upward bias will appear in a family income distribution when two groups of related persons who lived separately during all or most of the year doubled-up just before the survey date (e.g. a son and daughter-in-law moved in with his parents). However, the postwar period has been generally characterized by the reverse type of change – an undoubling of households – so that the net bias has doubtless been downward.

It has not been possible to measure the extent of the downward bias in the income distribution figures, but it was certainly larger in the immediate postwar period, when the undoubling of households was relatively important, than in any recent year when this kind of change in composition did not take place for the vast majority of families. Although the net downward bias generally affects all distributions to some extent, it probably operated most strongly in recent years on the income distribution of unrelated individuals who are heavily concentrated at both ends of the age range. The following discussion is therefore limited to the universe of multi-person families.

C. *Socio-economic groups of families*

The median money income of the 45 million families in the United States was $5,400 in 1959. About 10 million families received cash incomes under $3,000, another 10 million had incomes between $3,000 and $5,000, and 15 million had incomes between $5,000 and $8,000. Of the remaining 10 million families somewhat under 5 million received amounts ranging from $8,000 to $10,000 and 5½ million had incomes in excess of $10,000.

As Table I indicates, there are a number of striking differences in the demographic composition of these broad income groups of families. In the group under $3,000 are found relatively high proportions of families with lower than average economic requirements, namely, families with older-aged heads, newly-formed families with relatively young heads, and smaller-sized families. For example, almost one-third of the families with cash incomes under $3,000 in 1959 had heads 65 years and over, whereas for the population as a whole this proportion was less than one-seventh. One-half of the under $3,000 group consisted of two-person families, as compared with less than one-third in the population as a whole.[1] In sharp contrast, the top income groups – those with incomes above $8,000 – are found to consist predominantly of families in the middle range of the age scale (from 35 to 64 years old), and of medium-size (4 to 6 persons).

Included in the low income group are also a large fraction of 'broken' families headed by females. In 1959 such families accounted for one-fourth of the entire group with incomes under $3,000, whereas in the middle and upper income ranges they comprised well under 10 per cent of the total. The relatively low incomes of families with female heads, it may be noted,

[1] The annual Current Population Surveys do not permit joint multiple cross-classifications of families by all of the variables shown in Table I. It is anticipated that such cross-classifications will be provided in the tabulations of income data collected in the 1960 Decennial Census.

reflect in large part the low percentage of these women having full-time jobs. Frequently this is because of the presence of young children who require their mother's care (30 per cent of the female heads had children under 12 years old in the home in 1960), but it also reflects the much larger proportion of female than of male family heads who are older persons.

Rural-farm families also predominated in the lower income range to a much greater extent than in the middle and upper income brackets. In 1959 one-fifth of the families with cash incomes under $3,000 lived in rural farm areas, as compared with the 8 per cent that this farm group comprised of the total family population. In this connection, it is important to note that the restriction of the income definition and coverage in the Census surveys to net money receipts understates the relative economic status of the farm group. If the value of food and fuel produced and consumed on the farm were to be included in the income concept, the proportion of farm families in the lower income brackets would be somewhat reduced. However, the available evidence indicates that even with this definitional adjustment the farm group is relatively much more concentrated in the lower income range than are non-farm families.[1]

D. *Occupational composition of income groups*

Perhaps the most striking differences among the broad income groups distinguished in Table I are with respect to occupational composition. Reflecting in part the demographic characteristics already noted, the lowest income group was composed to a very large extent of families whose heads were not in the labour force, i.e. who were neither working nor looking for work at the time of the survey. In 1959 over 40 per cent of the family heads with incomes under $3,000 were in this 'retired' category, as compared with only one-sixth in the $3,000 to $5,000 income range and well under one-tenth in higher income

[1] Census survey data indicate that 53 per cent of rural farm families reported net cash incomes under $3,000 in 1959 as compared with about one-fifth of non-farm families (Bureau of the Census, 'Income of Families and Persons in the United States: 1959', Series P-60, No. 35). The figure of 53 per cent is reduced to 45 per cent when selected non-money income items (home-grown food and fuel and net rental value of owner-occupied homes) are included in the income definition (*Survey of Current Business*, May 1961, p. 18); however, certain non-measured differences in farm definition and farm income coverage are also reflected in this decrease of 8 percentage points. The inclusion of non-money income has a relatively larger effect on the figures for the lowest $1,000 income bracket.

brackets.[1] Another 6 per cent of the families with incomes under $3,000 reported that the family head was unemployed at the time of the survey in early 1960; for such families an occupation group was not assigned.

Three broad occupational groups of employed workers predominated in the lower income range – families whose heads were farmers, service workers (including private household workers), and labourers. Together these relatively lower-paid occupation groups accounted for almost 30 per cent of the families with incomes under $3,000 in 1959, or almost twice the proportion that these occupations represented in the total family population.

In the middle income ranges between $3,000 and $8,000, families headed by craftsmen and operatives comprised the relatively most important occupational classification. These blue-collar groups accounted for about 40 per cent of the families in the income range as contrasted with 30 per cent in the family population as a whole. In the lower part of this range, i.e. between $3,000 and $5,000, service workers and labourers were also more than proportionately represented; whereas in the upper part, i.e. between $5,000 and $8,000, clerical and sales workers replaced the service-labourer category as the second largest occupational grouping.

The top income range was generally characterized by a large representation of this proprietor-manager-professional group. As compared with the 20 per cent which this occupational category represented in the population as a whole, it accounted for almost one-third of the families with incomes between $8,000 and $10,000, and for almost 55 per cent of those with incomes above $10,000. Within the income range between $8,000 and $10,000, however, the proprietor-professional group was outnumbered by craftsmen and operatives who, together with clerical and sales workers, comprised one-half of the total number of families. Above $10,000, the relative importance of craftsmen-clerical group dropped to 30 per cent, or only a little over one-half the proportion representing proprietors, managers, and professional workers.

[1] Those families with heads in the Armed Forces that are included in the Current Population Survey (see footnote, p. 250) are tabulated together with the group not in the labour force. However, these armed-force families numbered less than 1 million in all in 1959, as compared with 7 million families with heads not in the labour force.

E. *Changes in family composition of income groups*

Over the past twenty-five years there have been a number of significant changes in the composition of the various family income groups. This is indicated in Tables II and III, in which pertinent data on family composition have been summarized for selected years in the period 1935–59. In order to facilitate comparisons from one period to another, the families in each year have been grouped into five groups of equal number ('quintiles' or 'fifths') on the basis of their rank according to annual income, and the data on family composition have been summarized for each fifth.

The most interesting changes in the composition of the quintiles relate to size of family and age of head. Despite the fact that the average size of family has increased somewhat during the postwar years (rising from an average of 3·59 persons in 1948 to 3·68 persons in 1959), the average at the present time is well below what it was two and a half decades ago (3·88 persons per family in 1935–6).

This long-term decrease was heavily concentrated in the lower income ranges, with the sharpest decline found in the lowest quintile. Thus, the 20 per cent of families with lowest incomes in 1959 averaged only 3·24 persons, whereas their counterparts in 1935–6 averaged 3·73 persons. Declines in average size were much smaller in successively higher income groupings, and for each of the two top quintiles average family size showed relatively little change over the twenty-five-year period (Table II).

Not only did the lowest quintile include a much higher proportion of smaller-sized families in 1959 than in 1935–6, but it represented on the average an older population. The median age of heads of the fifth of urban families with lowest incomes increased by ten years (from 43 years in 1935–6 to 53 years in 1959), and the median of the next-to-lowest fifth increased by five years. In contrast, the median age rose by only two or three years for middle and upper fifths.

This long-term tendency for low income quintiles to include larger proportions of the older-aged population reflects in part the introduction of the social security programme whose benefit payments enable many elderly couples to maintain themselves as independent families rather than moving in with younger relatives as they did twenty-five years earlier. That this tendency

TABLE II

Average number of persons, earners, and children per family and median age of family head, for fifths of families ranked by size of family money income, 1935–36, 1941, 1944, 1948, 1949, 1957, and 1959

Fifths of families	1935–36	1941	1944	1948	1949	1957	1959
	Average number of persons						
Lowest	3·73	3·55	3·10	3·29	3·26	3·27	3·24
Second	3·93	3·63	3·38	3·52	3·48	3·60	3·64
Third	3·92	3·67	3·64	3·58	3·61	3·75	3·80
Fourth	3·87	3·65	3·74	3·62	3·60	3·80	3·83
Highest	3·92	4·00	3·83	3·94	3·89	3·82	3·89
Total	3·88	3·70	3·54	3·59	3·57	3·65	3·68
	Average number of earners[1]						
Lowest	1·10		·96	1·06	1·07	1·07	1·02
Second	1·17		1·18	1·32	1·32	1·41	1·38
Third	1·24		1·32	1·40	1·39	1·50	1·52
Fourth	1·34		1·53	1·62	1·59	1·72	1·72
Highest	1·52		1·83	2·03	1·98	1·99	1·99
	Average number of children under 18 years						
Lowest	1·40	1·30		1·14	1·18	1·19	1·19
Second	1·51	1·35		1·29	1·25	1·43	1·45
Third	1·42	1·31		1·30	1·34	1·54	1·56
Fourth	1·29	1·10		1·19	1·22	1·47	1·50
Highest	1·07	1·00		1·03	1·01	1·27	1·30
Total	1·34	1·21		1·19	1·20	1·38	1·40
	Median age of family head (urban families)						
Lowest	43			50			53
Second	39			41			43
Third	40			41			43
Fourth	41			43			44
Highest	46			48			48
Total	42			44			46

[1] These figures understate the average number of earners because they are based directly on field survey data and have not been adjusted for under-enumeration of the number of earners (i.e. persons with some earnings during the year from wages or salaries or self-employment) in those surveys.

Source: 1935–6 and 1941 from Selma Goldsmith *et. al.*, 'Size Distribution of Income Since the Mid-Thirties', *R. Econ. Stat.*, Vol. 36, 1954, p. 15; other years derived from Bureau of the Census, U.S. Department of Commerce, *Current Population Reports*, Series P-S, No. 22, and Series P-60, Nos. 6, 7, 30 and 35.

has continued in the postwar period is evidenced by the fact that the percentage of family heads who were 65 years old and over, as well as the median age of family heads, increased markedly during the past decade in the two lower income quintiles, but remained stable or decreased in upper-income fifths (Table III).

TABLE III

Family composition: fifths of families ranked by size of money income, 1948, 1957, and 1959

Fifths of families	Median age of family head			Per cent of family heads 65 years old and over			Per cent of families with female heads			Per cent of husband-wife families with wife in paid labour force		
	1948	1957	1959	1948	1957	1959	1948	1957	1959	1948	1957	1959
Lowest	51·9	55·0	54·4	27·6	32·9	32·9	19·8	22·7	24·5	13·4	16·0	16·5
Second	42·0	43·9	43·8	11·2	14·4	14·8	10·7	11·1	11·3	17·6	22·3	22·6
Third	41·1	40·0	41·7	7·7	7·3	7·8	6·0	6·6	6·1	17·5	24·3	26·1
Fourth	42·3	41·9	42·5	6·7	5·8	6·5	5·5	5·0	4·5	27·2	33·4	34·5
Highest	47·4	45·6	46·5	7·9	6·0	6·6	6·2	3·9	3·6	30·5	41·2	40·1
Total	44·5	45·1	45·1	12·2	13·3	13·7	9·6	9·9	10·0	21·5	28·1	28·6

Source: Derived from Bureau of the Census, U.S. Department of Commerce, *Current Population Reports*, Series P-60, Nos. 6, 7, 30 and 35.

Reflecting these changes in composition, the average number of earners per family in the lowest income fifth showed a slight downward trend in contrast to sharp increases in middle and top quintiles. (Earners are defined as persons with some cash receipts during the calendar year from wages or salaries or self-employment.) Between the late depression year 1935–6 and 1959, the average number of earners per family fell from 1·1 to 1·0 for the lowest fifth of families, but increased from 1·5 to 2·0 for the top quintile (Table II). In other words, the older-aged, smaller-sized, families that predominate in the lowest quintile to a greater extent at the present time than in 1935–6 serve to reduce the total number of earners in that fifth. Larger-sized, younger families with more earners have been able to locate themselves relatively further up the income scale during the postwar period than could similar families in the depression period of the mid-1930s. As Table II indicates, this pattern of change appears to have continued during the postwar years, when the average number of family earners in the lowest quintile showed a further decline.

The postwar period also witnessed a continuation of what was probably another long-term trend, namely, an increasing representation in the lowest quintile of families headed by females (Table III). These 'broken' families accounted for 20 per cent of the lowest income fifth in 1948, but almost 25 per cent in 1959. (Comparable figures are not available for 1935–6.) In contrast, families with female heads have decreased substantially in relative importance over the past decade within the two top income fifths. It is of interest that 'broken' families were an atypical group during the postwar period in that their real incomes on the average showed no overall rise. In contrast to substantial increases in real purchasing power experienced by other major socio-economic groups of families, as revealed by Census survey data for the period 1947–59,[1] the percentage rise in the median current-dollar income of families with female heads was no larger than the relative rise that took place in consumer prices (about 30 per cent between 1947 and 1959).

Among families containing both husband and wife, still another postwar development is highlighted in Table III, namely, the increase in the importance of working wives. This increase appeared within all income quintiles, but was greatest in the top income fifth, within which the proportion of working wives increased by 10 percentage points (from 30 per cent in 1949 to 40 per cent in 1959). In relative terms, however, the largest rise was in the middle quintile where the working rate of wives was up by one-half (from 18 per cent in 1949 to 26 per cent in 1959).

The postwar rise in the labour force participation rate of wives represents once again a continuation of long-term trend. The proportion of husband-wife families having a wife in the paid labour force has increased from less than 5 per cent in 1890 to about 15 per cent in 1940, 22 per cent in 1949, and 29 per cent in 1959.

The effect of this increase on the relative inequality of the family income distribution is an intriguing problem that has not yet been studied in detail in this country. Time series on the proportion of working wives and their average earnings, classified by family income brackets, are not particularly informative for studying the effect of the working wife on income inequality, because the family income bracket itself includes the wife's earnings. The question that requires answering is the relative extent to which the additional earnings of working wives have operated to increase the family incomes of husbands in low, middle, and high earnings brackets. A comparison between 1939 and 1959 of Census tabulations showing husband-wife families by earnings brackets of the husband cross-classified by earnings brackets of the wife (including a no-earning bracket), has been undertaken at the Census Bureau, which should throw some new light on this subject.

[1] Bureau of the Census, 'Income of Families and Persons in the United States: 1959', Series P-60, No. 35, p. 6.

Changes in the occupational distribution of income fifths, which are summarized in Table IV, underscore the basic character of the postwar shifts in family composition that have been noted earlier. The lowest fifth in 1959 was populated to a much larger extent than a decade earlier by families headed by retired workers. Together with the unemployed (who represented 6 per cent of the families in the quintile), the retired group accounted for one-half of the lowest fifth of families in 1959, as compared with three-eighths in 1948. Offsetting the increase in the proportion of retired-worker families, there was a very substantial fall in the importance of the self-employed proprietor-professional group within the lowest income quintile.

The decrease in the proportion of self-employed workers appeared also in other income fifths, and was particularly marked in the top quintile. Although this decrease stemmed in large part from the reduction which has taken place in the number of farm operators in the United States, it also reflected some fall in the relative importance of non-farm proprietors among family heads in the working force.

The outstanding postwar increase among major occupation groups occurred for heads of families working for salaries at professional jobs or as managers or officials. In terms of absolute numbers, the total group has grown by over 60 per cent during the past decade (from 3·7 million in 1948 to 6·1 million in 1959). The growth was most pronounced in the two upper quintiles. Within the top income fifth, for example, the salaried professional-managerial group accounted for less than one-fifth of the total in the immediate postwar period, but for almost one-third in 1959.

F. *Implications of changes in family composition for measures of income inequality*

It is not proposed here to describe in detail the measures of changes in relative income inequality that have been developed for the United States for the past few decades, because they have been discussed at some length elsewhere.[1] In summary, the

[1] The best-known work relating to shares to top income groups is Simon Kuznets, *Shares of Upper Income Groups in Income and Savings*, 1953. A description of the data on relative shares of income fifths and their limitations, is to be found in Selma F. Goldsmith, 'Size Distribution of Income and Wealth in the United States', in *Die Konzentration in der Wirtschaft*, Herausgegeben von Helmut Arndt, 1960, and 'Changes in the Size Distribution of Income', *American Economic Review*, May 1957.

TABLE IV

Major occupation of family heads: fifths of families ranked by size of money income, 1948 and 1959

(Per cent distribution of families)

Fifths of families	All families	Self-employed proprietors and professionals (incl. farmers)	Salaried professionals, managers, and officials	Clerical and sales workers	Craftsmen and operatives	Service workers (incl. priv. hhld. wkrs.) and labourers	Not in labour force, in Armed Forces, or unemployed
1948:							
Lowest	100·0	28·0	1·6	2·5	13·2	17·6	37·1
2	100·0	16·7	5·5	7·5	32·7	18·6	19·0
3	100·0	13·7	9·5	12·1	41·2	12·0	11·5
4	100·0	13·5	12·9	12·5	43·4	8·4	9·3
Highest	100·0	23·6	19·4	11·5	29·8	6·4	9·3
Total	100·0	19·2	9·7	9·2	32·1	12·6	17·2
1959:							
Lowest	100·0	17·4	1·9	2·8	11·8	15·5	50·5
2	100·0	12·0	5·8	9·1	32·5	16·0	24·8
3	100·0	9·5	10·7	13·8	41·0	11·4	13·5
4	100·0	8·4	18·4	14·0	42·0	8·1	9·2
Highest	100·0	16·2	31·2	13·0	26·8	4·7	8·2
Total	100·0	12·7	13.7	10·6	30·8	11·1	21·3

Source: Derived from Bureau of the Census, U.S. Department of Commerce, *Current Population Reports*, Series P-60, Nos. 6 and 35. (The occupational distributions for 1948 have been adjusted for comparability with the classification introduced by the Census Bureau in 1950.)

available data, as shown in Table V, indicate that over the past three decades there has been a narrowing of relative differences in before-tax incomes, as measured by the percentage shares of total personal income received by successive fifths or by the top 5 per cent of the family population ranked by income. Most of this narrowing took place between 1941 and 1944 accompanying the introduction of a full-employment economy. For example, a very large part of the rise in the percentage share of total income accruing to the lowest 40 per cent of families was confined to those years. During the postwar period there has been a

TABLE V

Per cent distribution of total family personal income[1] among fifths and top 5 per cent of consumer units[2], selected years, 1929–59

Fifths of consumer units[3]	1929	1935–1936	1941	1944	1947	1951	1954	1959
Lowest	12·5	4·1	4·1	4·9	5·0	5·0	4·8	4·5
2		9·2	9·5	10·9	11·0	11·3	11·1	10·9
3	13·8	14·1	15·3	16·2	16·0	16·5	16·4	16·2
4	19·3	20·9	22·3	22·2	22·0	22·3	22·5	22·7
Highest	54·4	51·7	48·8	45·8	46·0	44·9	45·2	45·7
Total	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0
Top 5 per cent	30·0	26·5	24·0	20·7	20·9	20·7	20·3	19·9
Average personal income per consumer unit:								
In current dollars	2,340	1,630	2,210	3,610	4,130	4,900	5,360	6,610
In constant (1960) dollars	4,190	3,680	4,570	[4]	5,370	5,630	5,910	6,730

[1] Family personal income represents the current income received by consumer units from all sources, including wage and salary receipts (net of social insurance contributions), other labour income, proprietors' and rental income, dividends, personal interest income, and transfer payments. In addition to monetary income flows, family personal income includes certain non-money items such as wages in kind, the value of food and fuel produced and consumed on farms, the net imputed rental value of owner-occupied homes, and imputed interest. Total family personal income is a somewhat smaller amount in each year than the personal income aggregate from which it is derived, because it excludes the income received by institutional residents (including military personnel not living with their families), or retained by non-profit institutions, private trust, pension and welfare funds.

[2] For definition of 'consumer unit' see text, section 1.

[3] Consumer units are ranked by size of family personal income.

[4] For limitations of the price deflator for war years, see Selma Goldsmith *et al.*, 'Size Distribution of Income Since the Mid-Thirties', *R. Econ. Stat.*, Vol. 36, 1954, pp. 4–5.

Source: Years except 1935–6 and 1941 from Office of Business Economics, U.S. Department of Commerce. For sources of data, see U.S. Bureau of the Census, *Historical Statistics of the United States, Colonial Times to 1957*, 1960, pp. 161–2 and 166, and Office of Business Economics, *Survey of Current Business*, May 1961, pp. 16, 19.

Note: For comparability of data with other tables, see note on Table VII.

general stability in the relative shares of total income received by the various income groups – a stability that is all the more striking because it has been accompanied by a very marked increase in real family incomes.

As students of national income, we are aware that certain types of income escape measurement in our figures and that some of these items affect particularly our income size distribution series. For example, the decline in the relative shares of total income received by top income groups shown in Table V is exaggerated by the exclusion or incomplete measurement in our personal income aggregate of such items as stock options and deferred compensation contracts granted executives, liberalized treatment of business expense accounts and depreciation allowances, and capital gains. These types of income accrue more than proportionately to upper income groups and most have grown in relative importance in recent years.

Unfortunately, it has not been possible to develop reliable statistical measures of most of these omitted items. Such calculations as have been made indicate, however, that their magnitude could not have been sufficiently large to offset the long-term decline in upper income shares such as is shown in Table V over the past three decades. However, within the more recent postwar period the inclusion of the items might very well change the pattern of relative stability in the postwar period shown in Table V to one in which the percentage shares of income accruing to the upper income sector would show some increase.

Certain of the changes in the family composition of income groups that have been described above have operated, at least partially, to offset the increase in income inequality that would result from the inclusion of the items that now escape measurement. Thus, to the extent that today's low-income families are of relatively smaller size than a decade earlier, and consist to a greater degree of older-aged families with smaller economic needs, and that high-income families have changed in the reverse direction, relative income differences in a real sense have narrowed – a fact that is not measured in the overall figures for the postwar period in Table V. On the other hand, another postwar change in the composition of the low-income group to which attention has been called – the increase in the importance of families with female heads in the lowest income fifth – would not in itself have operated to reduce differences in relative income shares except in so far as these families are of smaller than average size.

II. IMPACT OF THE FEDERAL INDIVIDUAL INCOME TAX

For a number of purposes it would be useful to have estimates of tax liabilities, by income bracket, for all of the major socio-economic groups of families described above. Such a cross-section view of the tax burden would provide the basis for a more realistic evaluation than is now possible of the relative impact on different family groups of alternative proposals for modifying the present income tax structure. Furthermore, studies of income redistribution would be more meaningful if the major socio-economic groups of families receiving income transfers of various types could be separately distinguished.

Several overall estimates of tax incidence have been developed for this country, including those for postwar years prepared by Musgrave and Bishop.[1] They cover all types of tax liabilities, but refer to all families as a whole, classified by income bracket, without any breakdowns by socio-economic groupings. Those estimates are not discussed here, on the assumption that Professor Musgrave will describe them in the paper he is presenting to this Conference.

As a first step in developing distributions of tax liabilities among major socio-economic groups of families, estimates of Federal individual income tax incidence are presented below for families in seven major occupation groups. Although the tax figures are confined to Federal individual income-tax liabilities, it must be recalled that this element of the tax structure accounts for over four-fifths of total direct personal tax payments in this country (including State and local, as well as Federal income, death, estate, gift, and other direct taxes). On the other hand, if all types of taxes are considered (including also corporate profits, business property, excise and sales taxes, and social insurance contributions), the Federal individual income tax represents only about one-third of the total.

As Musgrave and others have demonstrated, the incidence

[1] Richard A. Musgrave, 'The Incidence of the Tax Structure and Its Effects on Consumption', *Federal Tax Policy for Economic Growth and Stability*, Joint Committee on the Economic Report, 84th Congress, 1st Session, 1956; Tax Foundation, Inc., *Allocation of the Tax Burden by Income Class*, May 1960; George A. Bishop, 'The Tax Burden by Income Class, 1958', *National Tax Journal*, March 1961.

of a number of these other types of tax is much less progressive than the income tax, and for certain types it is regressive. It is therefore important that the present figures be supplemented by estimated distributions of other taxes among socio-economic groups of families. This should prove possible at a later date, on the basis of the sample data on family income and consumption expenditures which were recently collected for various socio-economic groups of families by the Bureau of Labour Statistics.

A. *Overall family income distribution*

Before turning to the cross-section estimates of Federal individual income taxes for major occupation groups, it is of interest to review the effect of the tax on the inequality of the overall family income distribution. For this purpose, estimates of average taxes and tax rates on a family personal income base are presented for selected years in Table VI, and percentage shares of after-tax income received by successive fifths and by the top 5 per cent of consumer units are shown in Table VII.

Impact of the income tax in 1959. The progressivity of the Federal individual income tax in the current period is illustrated by the figures for 1959. For families and unrelated individuals in income brackets under $15,000 the average rates ranged from 2 per cent to 10 per cent of family personal income; above $15,000 they averaged 19 per cent, and above $50,000, 34 per cent (Table VI).

In appraising these rates, it should be noted that they are substantially lower than those generally employed by taxpayers in computing their income-tax liabilities. The rates for families and unrelated individuals in Table VI were obtained by dividing their Federal individual income-tax liabilities (exclusive of liabilities on capital gains) by their aggregate family personal income; the size classification in the table is also in terms of family personal income. Except for the fact that capital gains are excluded, family personal income is a more broadly defined measure than the 'adjusted gross income' shown on tax returns, which represents the sum of reportable income items before the subtraction of personal deductions and exemptions. Not only does family personal income include non-taxable items such as social insurance benefits and the various non-money income items covered in the national income accounts, but it also includes certain types of taxable money income not fully

TABLE VI

Average Federal individual income tax liability per family and unrelated individual, and tax rate, on a family personal income base, by family personal income brackets, 1929, 1941, and 1959

Family personal income	Average tax per family and unrelated individual			Tax rate (tax as a percentage of family personal income)		
	1929	1941	1959	1929	1941	1959
	$	$	$			
Under $2,000	—	5	26	—	0·5	2·3
$2,000–$3,000	—	35	119	—	1·4	4·7
$3,000–$4,000	1	76	203	[1]	2·2	5·8
$4,000–$5,000	2	143	289	[1]	3·2	6·4
$5,000 and over	268	1,545	1,131	2·3	14·6	11·5
Total	18	101	682	0·8	4·6	10·3
$5,000–$6,000			407			7·4
$6,000–$7,500			564			8·4
$7,500–$10,000			757			8·8
$10,000–$15,000			1,165			9·7
$10,000 and over			2,471			14·8
$15,000 and over			4,906			19·3
$50,000 and over			28,893[2]			33·7[2]

[1] Less than 0·05.

[2] Figure applies to 1958.

Source: Estimates for 1929 were developed by the author on the basis of *Statistics of Income for 1929*, Bureau of Internal Revenue, U.S. Treasury Department, and related data; those for 1941 underlie figures published in Selma Goldsmith *et al.*, 'Size Distribution of Income Since the Mid-Thirties', *R. Econ. Stats.*, Vol. 36, 1954; those for 1959 from Office of Business Economics, U.S. Department of Commerce, *Survey of Current Business*, May 1961.

Note: for comparability of data with other tables, see note on Table VII.

reported on tax returns. Secondly, it frequently represents the sum of incomes reported on two or more individual tax returns filed by members of the same family. For both of these reasons the distribution of tax returns, together with their reported tax liabilities, may be viewed as having been shifted up the income scale when the classification by size of income was converted from the adjusted gross income measure used on individual income tax returns to the family personal income base used in Table VI.

Reflecting this shift, the average tax and the tax rate in any given income bracket will generally be smaller than corresponding figures taken directly from tax returns. In 1959, for example, the tax rate of 19 per cent for consumer units in the income range above \$15,000 shown in Table VI contrasted with a rate of 26 per cent for taxable income-tax returns in the same range.[1] Above \$50,000 the comparable rates were 34 per cent and 39 per cent, respectively. Both these sets of average rates are substantially lower, of course, than average rates that are frequently computed on taxable income (i.e. adjusted gross income minus allowances for personal deductions and exemptions), and lower than marginal rates on increments of taxable income.

The Federal individual income tax, despite its progressivity, had generally only a moderate effect on the relative shares of total income received by successive fifths of consumer units. As indicated by a comparison of the after-tax income shares in Table VII with corresponding before-tax shares in Table V, the impact of the tax was to increase somewhat the percentage shares of total income of the four lowest quintiles of consumer units at the expense of the top income quintile. In 1959 the increase was about ½ of a percentage point for each of the quintiles except the highest, whereas the share of the top fifth was reduced from 46 per cent of before-tax income to 44 per cent of after-tax income. This reduction was confined to the top 5 per cent of consumers whose income share was lowered from 20 to 18 per cent.

The effect of the progressivity of the tax is concealed to some extent by the broad range of incomes included in the top grouping. The 5 per cent of consumer units with highest incomes in 1959 comprised families and unrelated individuals with personal incomes in the range above \$15,000, whose tax rate averaged only about 20 per cent of family personal income. If it were possible to develop separate estimates for top percentiles of consumer units, the progressivity of the tax would be reflected in progressively larger relative differences between percentage shares of before- and after-tax income.

Changes in tax impact, 1929–1959. The tax rates that have been described for 1959 contrast markedly with those of three decades ago when income taxes were non-existent or negligible for all but relatively high income families. For the broad \$5,000 and over personal income bracket, which included about 7 per cent of the consumer units in 1929 and over one-half in 1959, the tax rate on family personal income was 2½ per cent in

[1] *Statistics of Income, 1959,* Internal Revenue Service, U.S. Treasury Department.

TABLE VII

Per cent distribution of family personal income after Federal individual income tax liability[1] among fifths and top 5 per cent of consumer units,[2] Selected years, 1929–59

Fifths of consumer units[3]	1929	1941	1951	1959	Per cent increase 1929 to 1959: After-tax income shares	Per cent increase 1929 to 1959: Before-tax income shares[4]
Lowest	12·6	4·3	5·4	4·9	29·4	23·2
2		9·9	11·9	11·4		
3	13·9	15·9	17·2	16·8	20·9	17·4
4	19·5	23·1	22·8	23·1	18·5	17·6
Highest	54·0	46·9	42·7	43·8	− 18·9	− 16·0
Total	100·0	100·0	100·0	100·0		
Top 5 per cent	29·5	21·5	18·4	17·8	− 39·7	− 33·7
Average after-tax income per consumer unit:						
In current dollars	2,320	2,110	4,420	5,930		
In constant (1960) dollars	4,160	4,360	5,070	6,040		

[1] For definition of family personal income see Table V, f. 1. Federal individual income tax liability is the amount reported on tax returns, minus the liability on net capital gains and the liability of military personnel not living with their families, plus an estimate of amounts uncovered by subsequent audit.

[2] For definition of 'consumer unit' see text, section 1.

[3] Consumer units are ranked by size of family personal income.

[4] Based on Table V.

Source: 1929 – Derived by subtracting tax liabilities excluding those on capital gains (derived from data reported in *Statistics of Income, 1929*, U.S. Treasury Department) from family personal income as given in Table V. 1941 – Based on data underlying Table 14 of Selma Goldsmith *et. al.*, 'Size Distribution of Income since the Mid-Thirties', *R. Econ. Stat.*, Vol. 36, 1954. 1951 and 1959 – Office of Business Economics, U.S. Department of Commerce, *Survey of Current Business*, April 1958, p. 17, and May 1961, p. 19.

Note: Data in Tables V–VII are not comparable with other tables in this article because of differences in the definition and coverage of income and in the types of consumer units included (families versus all consumer units). For discussion of differences between the family money income measure used in Census Bureau surveys and the family personal income measure used in the national income accounts, see *An Appraisal of the 1950 Census Income Data*, Vol. 23 of *Studies in Income and Wealth*, National Bureau of Economic Research, 1958, pp. 70–78.

the earlier year as compared with 11½ per cent three decades later (Table VI).[1]

In lower income brackets the bulk of the families in 1929 were not subject to tax, so that average liability on all-family

[1] It should be recalled that the tax measures presented here exclude liabilities on capital gains because the gains themselves are not included in the family personal income base. This excluded element represented over one-third of total Federal individual income tax liability in 1929, but only about 5 per cent in 1959. However, the inclusion of the capital gains tax would not alter the broad pattern of rate changes over time shown in Table VI.

basis amounted to only a few dollars or less. During the war and postwar periods the revenue requirements of the Government led to increases in tax rates and to a broadening of the tax base to include the incomes of an increasingly larger proportion of the population. This is reflected in tax rates for 1941 which ranged from an average of ½ per cent of personal income for families and unrelated individuals with incomes under $2,000 to 3 per cent in the $4,000 to $5,000 bracket, and 14½ per cent for the group above $5,000. By 1959 the average rates were substantially higher, except for the broad $5,000 and over bracket.

The apparent decrease in tax rates between 1941 and the postwar period which is shown by statistical averages for the $5,000 and over income range as a whole, has been discussed in detail elsewhere.[1] Actually, postwar tax rates continued to exceed those in 1941 considerably above the $5,000 income point. The apparent decline in the average for the overall range stemmed in part from differences in the distribution of families *within* the range in the two periods. The rise in incomes during the war and postwar years led to a broad upshift of consumers from below to above the $5,000 point, and to a much larger proportion of families with incomes in the lower part of the range just above $5,000 than was the case in 1941.

This is evidenced by the fall in the current-dollar all-family average income in the $5,000-and-over range – from $10,600 in 1941 to $9,800 in 1959. Because of progressivity of tax rates within the range, these differences in family weights, in and of themselves, would serve to reduce the overall average tax rate relatively more than the average income.

In fact, intertemporal comparisons of tax rates for the same current-dollar income bracket are actually misleading for most purposes because they do not take account of the general increase in family incomes that has occurred during the past few decades – an increase that reflected both inflation and a substantial growth in real family purchasing power. If the effect of the first of these factors is eliminated by expressing incomes of all years in terms of constant (1959) prices, a rise of about 4 percentage points in average tax rates between 1941 and 1959

[1] Selma Goldsmith *et al.*, 'Size Distribution of Income Since the Mid-Thirties', *R. Econ. Stats.*, Vol. 36, 1954. The article also includes a discussion of the effect of the postwar introduction of the split-income provision, which reduced somewhat effective tax rates in the higher income ranges.

is indicated for the 'real' $5,000-and-over income range, in contrast to the fall of 3 percentage points shown by the current-dollar figures. If the effects of both inflation and real income growth are taken into account by comparing average tax rates, not for any particular income range, but for the top 20 per cent of consumer units in the two years, the post-1941 rise in tax rates is even more marked.

The progressivity of the Federal individual income tax was less pronounced in 1959 than in 1941 in the sense that relatively larger percentage increases in tax rates took place in low than in high income brackets (Table VI). It is difficult to make comparisons of this type with 1929 when the tax rates were zero, or averaged close to zero, for a large portion of the income range. In any event, from the standpoint of its equalizing effect on an income size distribution, the progressivity of a set of tax rates must be measured in a somewhat different fashion. To determine which of two sets of tax rates for any given set of income brackets will have the greater equalizing effect on a given family income distribution, it is not the percentage increases in the rates accompanying given percentage increases in before-tax incomes that must be compared, but, instead, the percentage decreases in the ratios of after-tax to before-tax income. One set of taxes may be more progressive than another in that relative increases in tax rates for given percentage increases in before-tax incomes are larger, but the second may be more progressive in its equalizing effect because relative decreases in the ratio of after-tax to before-tax incomes are larger.[1]

Furthermore, the equalizing effect of a tax structure depends not only on the progressivity of the tax rates themselves but also on the shape of the before-tax distribution. A given tax structure will have a greater equalizing effect to the extent that frequencies are relatively more concentrated in those before-tax income brackets in which the tax rates are most progressive.

To compare the equalizing effect of the Federal individual income tax in 1929 and 1959 in these terms, Gini concentration ratios were calculated for the distribution of consumer units by

[1] To take an extreme example, a tax structure with a 1 per cent rate on an income of $1,000 and a 5 per cent rate on an income of $2,000 will have a smaller equalizing effect on a given family income distribution than a second structure with corresponding rates of 20 and 24 per cent, despite the fact that the rise in tax rates is steeper in the first than in the second. This point was developed by Maurice Liebenberg in the article cited in the preceding footnote.

before-tax incomes and by after-tax incomes in each of the two years.[1] Next, an alternative after-tax distribution was derived for each year on the assumption that the tax rates of the other year had prevailed. Gini ratios were then calculated for each of those two hypothetical after-tax distributions.

The results are summarized in the tabulation below. They indicate that the income tax had a much larger equalizing effect in 1959 than in 1929.

	Before-tax incomes	*After-tax incomes*		
Year	Gini concentration ratio	Obtained by applying tax rates of the year—	Gini concentration ratio	Per cent reduction in Gini ratio
1929	·481	1929	·477	1
		1959	·461	4
1959	·386	1929	·379	2
		1959	·367	5

As measured by the Gini ratios, relative inequality in 1959 was about 5 per cent smaller on an after-Federal-income-tax basis than on a before-tax basis, whereas in 1929 the corresponding reduction in inequality was only 1 per cent. The greater impact of the tax in 1959 reflected both (1) the shift of consumers up the income scale that took place between 1929 and 1959, and (2) the larger equalizing effect of the tax rates themselves in the latter year. The second was the more important factor. As the tabulation indicates, if the tax rates of 1959 had been in effect in 1929, the reduction in the concentration ratio effected by the income tax would have been 4 per cent in 1929 instead of 1 per cent. And, if the tax rates of 1929 had been in effect in 1959, the reduction in the 1959 concentration ratio would have been only 2 per cent instead of 5 per cent.

The effect of the upshift in before-tax incomes can also be seen in isolation in the tabulation. With either 1929 or 1959 tax rates held constant, the substitution of the higher before-tax incomes of 1959 for those in 1929 would have increased the relative spread between the before-tax and after-tax measures of dispersion by about 1 percentage point.

[1] The ratios were calculated by the cross-product method applied to cumulated percentages of frequencies and aggregate income described in W. S. Woytinsky, 'The Measurement of Inequality in Individual Incomes or Earnings', *Economic Implications of a Social Security Program.*

B. *Tax liabilities of major occupation groups*

In order to evaluate with precision differences in the impact of the Federal individual income tax among various socio-economic groups of families, it would be necessary to develop specially designed tabulations of data reported on tax returns in which the returns filed by all members of the same family were combined, and the several types of families discussed earlier were distinguished. This would make it possible to examine differences among the socio-economic groups with respect to tax rates within given income brackets, and to determine the relative extent to which these groups are able to take advantage of various tax-saving devices that exist in our income-tax structure.

The introduction of electronic data processing may mean that these kinds of tabulations will be forthcoming at some future date. At the present time, however, cross-section data on family income tax liabilities are not directly available from the returns because classifications by occupation are not shown, and because the family is not the basic unit of tabulation in the classifications that are shown (e.g. number of dependants, type of return, and number of exemptions for elderly persons). Thus, despite the very broad coverage of Federal individual income tax returns (total income reported on returns represents about 90 per cent of comparably defined elements of aggregate personal income, and the coverage of the wage and salary component is 95 per cent), it is necessary to turn to other source data to develop cross-section distributions of income-tax liabilities.

The approximations presented below of the Federal individual income liabilities of each of seven broad occupation groups of families were derived by multiplying the number of families in the group within each income bracket by an estimated average tax. The number of families in each occupation group and income bracket was available from the Census Bureau survey that has been discussed in Section I. The average tax per family was estimated separately for each occupation group and income bracket by adjusting an all-family average tax for the corresponding income bracket so that it would apply as closely as possible to the specified occupation group.

The set of all-family average taxes, by income bracket, that was used for this purpose was developed from worksheets made available by the Office of Business Economics, and represent family Federal individual income tax liabilities classified by family money income brackets. Since the Census Bureau survey data are also classified by family money income brackets, this particular O.B.E. series was more appropriate for the purpose at hand than other sets that were examined (see Table X).

Full adjustment for variations in average tax among family groups within given income brackets would require that account be taken of variations in personal exemptions stemming from differences in average family size, in personal deductions reflecting greater or less use of the itemization provision, and in the type-composition of income which would include such factors as the relative importance of non-taxable items of income which are not reportable on returns, capital gains which receive special tax treatment, etc. The available data permitted adjustment for only the first of these factors so that the estimates of tax liabilities which have been developed here must be regarded as rough approximations. However, it can be surmised that variations in family size account for a large portion of differences in liabilities among sub-groups within the same income bracket.

It may be noted that it was not necessary to adjust for still another factor that suggests itself, namely, the deduction of business expenses by the self-employed group. These expenses have been subtracted by taxpayers in determining their incomes on tax returns (and this classification underlies the all-family average tax series noted above); the same or similar amounts have presumably been subtracted in determining their family money income as reported in the Census Bureau surveys.

Adjustments of the all-family average tax for variations in family size within a given income bracket were made on the basis of two sets of data: tax tables showing for each bracket the reduction in tax resulting from each additional dependant (a deduction of $600 from the income base on which the tax is computed is allowed for each such person); and special tabulations from the Census Bureau's Current Population Survey which show average family size for families classified by income and major occupation group.[1] For each occupation group and income bracket, the average size of family was compared with the corresponding all-family average size and the difference was used as a basis for adjusting upward or downward the overall

[1] The occupation groups in the special tabulations were based on the chief earner in the family. It was assumed here that the figures would be representative also of groups based on the occupation of the family head. The occupation refers to activity during the week of the Census Bureau survey.

average tax liability per family in that bracket to derive the estimated average tax for the occupation group.

Aggregate Federal individual income tax liabilities of the seven occupation groups were obtained by summing the tax estimates for each group over all income brackets.[1]

The progressive character of the tax is illustrated by the array of average taxes and tax rates in the last two columns of Table VIII. Rates range from about 16 per cent of family money income for the occupation with the largest average family income – self-employed proprietors and professional workers – to approximately 8½ per cent for the unskilled labourer category. Among the other occupations, also, a ranking by average taxes or tax rates is generally in accord with a ranking by average money income. The fact that the tax rate, though not the average tax, is somewhat higher for farmers than for labourers may be due to a lack of precision in the estimates.[2]

It may be noted that the all-family figure of $880 for average Federal individual income-tax liability in 1959 in Table VIII refers to families with heads who were employed at the time of the survey. Unrelated individuals and families headed by retired or unemployed workers, who are excluded from the table, pay lower taxes on the average than families with employed heads, so that the actual average tax per all-consumer unit is about $200 less than that figure.

Table IX compares Gini concentration ratios for the seven groups on a before-tax and after-tax income basis. Families headed by farmers and by self-employed proprietors and professionals show the largest relative inequality in income distribution, i.e. the largest Gini concentration ratios. Service workers and labourers are next; and salaried managers and professionals, followed by clerical-sales workers and craftsmen-operatives, show progressively less dispersion. Thus, there appears to be comparatively little correlation between the ranking of the occupations by size of average income (Table VIII) and by degree of income concentration (Table IX).

Although the relative impact of the income tax on the

[1] All of the computations were carried through separately for eleven income brackets: Under $2,000, $1,000 brackets to $8,000, $8,000 to $10,000, $10,000 to $15,000, $15,000 to $25,000, and $25,000 and over.

[2] The tax rates for the various occupations require re-examination to determine the degree to which they would be modified under various assumptions concerning itemization of personal deductions.

TABLE VIII

Distribution of families, aggregate family money income, and estimated Federal Individual income tax liabilities, by major occupation group of family head: 1959

Major occupation group of family head	Per cent distribution of			Average (mean family) money income per family $	Average (mean) Federal individual income tax liability per family $	Ratio of tax liability to money income (per cent)
	Families	Aggregate family money income	Federal individual income tax liability			
Total employed civilian heads[1]	100·0	100·0	100·0	6,800	880	12·9
Proprietors, professional and technical workers:						
Self-employed	9·5	13·3	16·6	9,540	1,540	16·1
Salaried	17·3	23·9	28·1	9,410	1,420	15·1
Farmers and farm managers	6·6	3·4	2·5	3,490	330	9·4
Clerical and sales workers	13·4	14·0	14·6	7,130	960	13·4
Craftsmen and operators	39·1	35·9	31·0	6,250	700	11·1
Service workers (incl. private households)	7·4	5·2	4·4	4,760	520	10·9
Labourers	6·7	4·3	2·8	4,370	370	8·4

[1] Excluding families with head not in labour force, in Armed Forces, or unemployed in March 1960.

Source: Estimates derived as explained in the text.

inequality of the distributions for the seven broad occupation groups varied, the effect was not large enough to cause a re-ranking of the groups in terms of relative inequality on an after-tax income basis. Of special interest is the fact that the shape of the before-tax distribution operated to reduce relative inequality to a greater extent among salaried manager-professional families than among self-employed proprietors and professionals. Although the mean income of the salaried group was somewhat smaller than that of the self-employed, the proportion in the income range between $6,000 and $15,000, where the progression in tax rates is marked, was larger.

TABLE IX

Gini concentration ratios for families by major occupation group of family head, by family money income before and after federal individual income tax liability: 1959

Major occupation group of family head	Concentration ratio		After-tax ratio as per cent of before-tax ratio
	Before-tax income	After-tax income	
Proprietors, profession and technical workers:			
Self-employed	·418	·390	93·2
Salaried	·287	·257	89·6
Farmers and farm managers	·449	·421	93·8
Clerical and sales workers	·269	·256	95·1
Craftsmen and operatives	·242	·229	94·6
Service workers (incl. private households)	·339	·326	96·0
Labourers	·321	·300	93·6

Source: Estimates derived as explained in text.

APPENDIX

COMPARISON OF TAX SERIES

In the course of developing distributions of Federal individual income taxes among occupational groups, a comparison was made of several different series on average Federal individual income-tax liabilities. These data may be of interest if only to emphasize the fact that results obtained in studies of income redistribution through income taxes may vary substantially depending on the particular set of tax rates and income definitions employed.

The several series, summarized in Table X for the year 1954, include: (1) average tax liabilities on a tax return basis, (2) averages on a spending unit basis, such as those used by Musgrave in his work on tax incidence in 1954,[1] and (3) averages on a family and unrelated individual basis, such as are employed in the income size distribution estimates of the Office of Business Economics and used recently by George Bishop in developing estimates of the distribution of the total tax burden.[2]

There is a great deal of variation in the several sets of average taxes both with respect to level and extent of progressivity, despite the fact that the total tax liability accounted for is quite similar in all sets.[3] The highest averages are those computed on a tax-return basis (columns 1–3 of Table X); this stems in large part from the fact that they are not reduced, as are other averages in the table, by units not filing tax returns. The lowest average taxes are for families and unrelated individuals classified by family personal income brackets (column 7).

Averages in columns 6 and 7 were developed by the Office of Business Economics by converting tabulated data from Federal individual income-tax returns from a tax return to a family basis. (Averages for 1959 corresponding to those in column 6 were used as a basis for developing the tax distributions among occupation groups described in this paper; for that purpose they were further adjusted to exclude the tax liabilities of unrelated individuals.) Differences between the averages in columns 6 and 7 stem from the fact that many families, along with their reported tax liabilities, were shifted to higher income brackets as the income concept was broadened from the money income reported on tax returns to the family personal income definition.

Tax liability progression, as measured by percentage increases in tax rates with increasing income is smaller on a 'tax-return paying taxes' basis (column 1) than on any other basis of classification used in the table, except in the case of top income brackets. Progressivity in this sense is also generally smaller throughout the middle range of the income scale in the distributions for families and unrelated individuals (columns 6 and 7) than in the spending unit distributions (columns 4 and 5).

[1] *Federal Tax Policy for Economic Growth and Stability*, Joint Committee on the Economic Report, 84th Congress, 1st Session, 1956.

[2] *Allocation of the Tax Burden by Income Class*, Tax Foundation, 1960.

[3] The Musgrave estimates (column 4 of Table X) account for a somewhat larger aggregate amount of tax than the other sets of averages, partly because his control total represents a collection rather than a liability figure. It may be noted that Musgrave's average tax for the $10,000 and over income bracket appears low in comparison with the corresponding Survey of Consumer Finances average on which he based his figures (column 5), particularly in view of the fact that he indicates that he added taxes on capital gains to the tax averages developed in the Survey of Consumer Finances (see p. 113 of report cited in footnote 1 above).

TABLE X

Average Federal individual income tax per return, per spending unit, and per family and unrelated individual, and effective tax rates, by income class,[1] : 1954

Income class as defined in footnote 1	Average per tax return			Average per spending unit		Average per family and unrelated individual	
	Per return paying taxes[2]	Per return filed: Incl. tax on capital gains[2]	Per return filed: Excl. tax on capital gains	Musgrave estimates[2]	Survey of consumer finances	By family money income class	By family personal income class
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Average tax						
	$	$	$	$	$	$	$
Under $2,000	97	37	37	36	29	25	24
$2,000–$3,000	213	158	159	137	138	154	114
$3,000–$4,000	311	269	270	245	240	257	188
$4,000–$5,000	404	386	386	381	378	389	277
$5,000–$7,500	642	635	637	702	635	641	500
$7,500–$10,000	1,080	1,078	1,082	1,210	1,151	1,038	762
$10,000 and over	4,679	4,673	4,424	3,576	3,598	3,559	2,894
Total	625	470	453	521	505	514	514
Total number of units[3] (millions)	42·6	56·7	56·7	54·0	54·0	51·2	51·2
Aggregate tax[4] (billions of dollars)	26·7	26·7	25·7	28·2	27·3	26·3	26·3
	Effective tax rate (tax as percent of income)[1]						
Under $2,000	7·1	3·8		3·1	2·7		2·0
$2,000–$3,000	8·5	6·3	6·3	5·4	5·5	5·8	4·6
$3,000–$4,000	8·9	7·7	7·7	7·2	6·9	7·2	5·4
$4,000–$5,000	9·0	8·6	8·6	8·6	8·5	8·3	6·2
$5,000–$7,500	10·7	10·5		11·9	10·7	10·1	8·2
$7,500–$10,000	12·9	12·9		14·9	13·6	11·8	9·0
$10,000 and over	23·7	23·7	23·1	20·2	21·3	19·7	16·5
Total	12·7	11·6	12·2	11·8	11·4	11·4	9·6

[1] Income classification for each column, and income used as base to compute effective tax rate, are as follows:

Columns 1 and 2. Individual income tax returns are classified by adjusted gross income as reported on the returns. Adjusted gross income represents income net of business expenses, but before the subtraction of personal deductions and exemptions.

Column 3. Tax returns in column 2 have been reclassified into income brackets representing adjusted gross income exclusive of net capital gain.

Columns 4 and 5. Spending units (defined as all related persons living in the same dwelling unit who pool their incomes to meet major expenses) are classified by their total money income. Tax rates differ from those presented by Musgrave (see Sources below) who used a broader definition of the income base.

Column 6. Families (defined as all related persons living in the same dwelling) and unrelated individuals (persons not living with any relatives) are classified by their total adjusted gross income exclusive of net capital gain. The 'Under $2,000' income class also includes families and unrelated individuals not covered on tax returns.

Column 7. Families and unrelated individuals (from column 6) have been reclassified by family personal income classes (including non-money as well as money items of income).

[2] Columns 1, 2 and 4 include tax on net capital gain. Other columns exclude this portion of the income tax.

[3] Column 1 – Number of taxable income-tax returns: Columns 2 and 3 – Number of taxable and non-taxable returns; Columns 4 and 5 – Total number of spending units; Columns 6 and 7 – Total number of families and unrelated individuals.

[4] Columns 1 and 2 – Total tax as reported on Federal individual income-tax returns; Column 3 – Total in column 1 less tax on net capital gain; Column 4 – Total tax collected during year thus differing with respect to timing from columns 1 and 2; Column 5 – Column 4 less tax on net capital gain; Columns 6 and 7 – Column 3 plus estimate for amounts uncovered by audit.

Sources: Columns 1 and 2 – *Statistics of Income: Individual Income Tax Returns for 1954*, U.S. Treasury Department, Internal Revenue Service; Columns 3 and 6 – Work sheets underlying figures in column 7; Column 4 – Derived from tables A-1, A-2, and A-4 of *Federal Tax Policy for Economic Growth and Stability*, Joint Committee on the Economic Report, 84th Congress, 1st Session, 1956; Column 5 – Underlying tabulations from 1955 Survey of Consumer Finances, Board of Governors of the Federal Reserve System, *Federal Reserve Bulletin*, June 1955; Column 7 – Office of Business Economics, *Survey of Current Business*, April 1958, page 19, Table 11.