

AN ESTIMATION OF U.S. FAMILY WEALTH AND ITS DISTRIBUTION FROM MICRODATA, 1973

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This paper presents a method of estimating U.S. family net wealth across the entire population, utilizing capitalization of several income items available from income tax microdata. Other forms of wealth, and debt, are indirectly estimated using relationships gleaned from estate tax data. Concentration in the distribution of wealth, and assets such as corporate stock, are measured with Gini coefficients and Lorenz curve analysis and compared to similar estimates of concentration in the distribution of income. Comparisons of the results with previous estimates for the United States are made in the latter section of the paper.

INTRODUCTION

Wealth, and its distribution, are both cause and consequence of the ways in which an economic system operates. But modern economics has focused much more heavily on measuring income, both in the aggregate and in distribution, leaving us with relatively little empirical evidence on wealth. Wealth distribution is critical not only from a welfare (or "demand-side" perspective) but is also a "supply side" issue in the sense that control over economic assets may affect the macroeconomic performance of the economy.

Almost twenty years ago, the U.S. Federal Reserve Board sponsored an extremely comprehensive survey in which families were interviewed regarding the size and composition of their assets and debts [1]. Wealth estimates for the United States since then have been based primarily on data from federal estate tax returns. An empirical study of these estimates indicates no major changes in the share held by top wealthholders during the last fifty years [2]. There has been no method of obtaining reliable information about the rest of the wealth distribution, in spite of the fact that it would be quite useful in analyzing the redistributive effects of growth, inflation, or tax policy and in addressing many social and economic issues. Estimates based on estate tax methods have been limited to the upper few percentiles of the population by the filing requirement of \$60,000 in gross wealth. A recent modification of the estate tax law by Congress raises the limit to \$225,000, limiting the use of the returns as a data base even more severely. In addition, the use of trusts and gifts in anticipation of death causes a downward bias in wealth estimated from estate tax returns, tending to understate the concentration of wealth [3].

The most recent surveys of wealth are the 1962 Survey of Financial Characteristics of Consumers (SFCC) and the 1967 Survey of Economic Opportunity (SEO). Both yielded valuable information about the distribution and composition of wealth, but did not arrive at a complete distribution of wealth, due to problems

of incomplete asset coverage, inaccurate reporting, and nonresponse. The Survey of Income and Program Participation, scheduled to collect information on some financial assets from middle and low income families in the early 1980s, is currently a casualty of federal budget cuts.

II. SUMMARY OF THE METHOD OF ESTIMATION

Estimates of the distribution of wealth have been based in the past on (1) estate tax returns, (2) surveys of wealth, or (3) income capitalization. The method of wealth estimation which is outlined here combines income capitalization with information from estate tax returns and survey data in order to arrive at a complete distribution of wealth. By using a sample of income tax returns merged with observations from the Current Population Survey (the Office of Tax Analysis file), it covers virtually the entire population.

Dividends for each family unit were capitalized into the value of corporate stock owned, and interest into the value of debt instruments owned. Survey data were analyzed to test the validity of varying rates of return with income level. Property tax paid divided by the effective property tax rate yielded estimates of the value of real estate owned. These three components of wealth were directly estimated by capitalization.

In order to estimate the value of net wealth, its relationship to the above components of wealth was calculated by regression methods from a sample of estate tax returns. Combining the parameters estimated from the estate tax returns with the components estimated from each individual family record yielded an estimated value of net wealth for each family. A frequency distribution of wealth by wealth classes was then constructed.

The strengths of this new method of estimation lie in its reliance upon a broad data base and its combination of income capitalization with data available from other sources. A simple capitalization approach cannot include wealth which does not produce income and has difficulty dealing with debt and certain types of wealth which are hard to estimate by capitalization. This approach overcomes these problems and is well-suited to replication at reasonably low cost.

III. THE NATURE OF THE ORIGINAL DATA

The data base for the wealth estimates is the 1973 file produced by the Office of Tax Analysis (OTA) in the Department of Treasury from a sample of 50,160 observations from the Current Population Survey (CPS) conducted by the Census Bureau and 45,030 tax records from the 1973 Individual Income Tax Model based on income tax returns. Although most of the information used in this estimate is from the income tax records, the use of the OTA file extends the sample to family units not required to file a tax return, makes possible the estimation of a distribution in family units rather than tax filing units, and provides information on age of head of household where the income tax record would not. In addition, imputations of non-taxable state and local bond interest

received by a family unit were added by OTA, along with estimates of property taxes paid by non-itemizers.¹

The combination of Census survey data and income tax records (through statistical merging) results in a file superior to either of these separately, due in part to differences in coverage.² The survey contains demographic and financial information on families, while the tax record is based on the tax-filing unit, which may be a single person, a married couple filing jointly, or a married person filing separately. Little demographic information is reported on a tax return, but the quality of the financial information is widely accepted as superior to Census figures. If a distribution of wealth were based on income tax returns, however, it would be neither a distribution of family wealth nor of individual wealth. Use of the Census data makes possible the merging of individual returns into families, where appropriate, and the inclusion of age of head of household information for the family. The more reliable tax return information on dividends, interest, and property taxes may thus be utilized at the family level.

In order to match CPS family units with one or more appropriate income tax returns, potential tax returns were created from the survey records and matched with the income tax returns [4]. For households which appeared to fail into the category where no tax return would be required (non-filers), dummy tax records were created in the tax sample. Records were matched with other records within \$1,000 of their AGI (adjusted gross income)³ based on an attribute function containing wage and salary income, property income and business income, and a penalty function which compared data on age, race, sex, and family size with data in the Census record.⁴ Tax records were then combined into the appropriate Census family units.

While the merged file included both Census and Internal Revenue Service (tax) income concepts, for purposes of this wealth estimation the dividends and interest came solely from the tax records. They were stated, however, in terms of family units, which means that the distribution may be expressed in family units.

Imputations made by OTA staff where data are missing have also served to make this a richer data base [5]. In this wealth estimate imputed state and local bond interest (which is not taxable) is added to taxable reported interest for use in arriving at an interest figure from which debt instruments may be estimated, and property tax payments for non-itemizers are used in estimating the value of their real estate.

State and local bond interest was imputed using the total amount of these bonds held by individuals as a control figure, and the average interest rate on these obligations, to estimate total tax exempt interest received in 1973. Families

¹Property taxes paid to State and local governments are an allowable deduction in deriving taxable income, and thus may appear on the tax return. However, taxpayers are not required to itemize deductions, and many do not.

²Census surveys do not include capital gains in the "Census money income" concept, for example, but do include all non-taxable transfers of income which tax records exclude. Low-income families who have not filed a tax return may be included in the survey, while persons abroad or in the military may file a return, but are not included in the sample frame.

³Adjusted gross income is the principal income concept employed in the U.S. income tax law. It includes all taxable income types, before allowable exemptions and deductions.

⁴Social security numbers had been used previously to obtain demographic information for the tax returns.

were classified into one of nine classes based on adjusted gross income (AGI). For each class, a given percentage of returns was randomly selected and allocated a mean amount of tax exempt interest. Below \$10,000 no returns had such interest imputed. The percentage of returns receiving interest varied from 2.9 percent in the \$10–15,000 AGI class to 46 percent in the over \$100,000 AGI class. The mean amount per return also increased with class.

Homeowners tend to be itemizers due to the provision in the tax code for deduction of mortgage interest. However, some older persons who no longer hold a mortgage and whose other potential deductible expenses are too low in relation to income to cause them to itemize still own real estate of moderate value. Imputations of property tax paid by non-itemizers such as these have been included along with reported property taxes and are part of the real estate estimates.

These imputations are a part of a fell set estimated for non-itemizers (which included other items such as medical expenses and state and local gasoline tax) at OTA. The estimation relied on a technique of within-file imputations called the Turner soft-link method [6]. Itemizer records were matched with non-itemizer records on the basis of a linkage function of similar characteristics such as filing status and the ratios of AGI, along with taxpayer race, sex, and year of birth, which had been brought from social security records to the tax record to aid in matching. Using the full set of itemizers as a “donor file,” data items passed through a transformation function as they moved from the donor file to the recipient file of non-itemizers. This function reduced the dollar amount of deductible items so that the total relative to AGI would no longer cause the filer to benefit by itemization. Since itemizers tend to have higher AGI than non-itemizers, transformation had to reduce the size of potential deductibles substantially. A total of \$1,631,000 in property taxes was imputed to sample observations relative to \$14,000,000 taken directly from federal income tax records.

IV. DEFINITION OF THE WEALTH CONCEPT

Net wealth, as defined in this estimate, includes all items with durability and realizable cash value, less all debts held by the economic unit. It is equivalent to the U.S. estate tax measure of wealth and broader than most survey concepts because it includes all debt, as well as personal possessions and the value of equity in life insurance, annuities, and retirement funds (where contributions have been paid by the beneficiary). While in theory automobiles and other consumer durables are included, their ownership is difficult to measure at the household level given our data base. Such assets are no doubt important in assessing relative standards of living among families. But they contribute only infinitesimally to economic power (one is no longer dependent on public transportation and laundromats, for example) and represent quite poor investment assets due to their rapid depreciation after purchase. Some authors have devised imputation methods to account for these durables, but the method used here relies on the correlation of their ownership with that of other assets, particularly real estate, as discussed in Section VIII.

V. CAPITALIZATION OF DIVIDENDS AND INTEREST

When capitalizing dividend income into a market value of stock the issue of the appropriate rate of return becomes critical. Studies by Crockett and Friend have found dividend-price ratios to be relatively constant across income class until very high incomes (\$50,000+ in 1960) were analyzed [7]. In the latter group, rates of return were lower as income rose. An analysis of the rates of return (dividend/price ratios) received by families in the 1962 Federal Reserve Survey of Financial Characteristics of Consumers (SFCC) showed no consistent differences between income classes, indicating that the average rate is the best predictor of any family's rate of return, regardless of family income level [8].

Corporate stock values were estimated here by capitalizing total reported dividends at the average rate of return on common stock for 1973 (which was 3.4 percent according to Moody's Investors Service), as in equation (1), below.

$$(1) \quad CSTK_j = DIV_j \cdot \frac{1}{r}$$

where

$CSTK_j$ = market value of corporate stock of j -th family

DIV_j = dividends received by j -th family

r = average rate of return (dividend/price ratio).

The value of all debt instruments, or interest-paying assets, was estimated by capitalizing total reported interest receipts by the average rate paid on savings accounts for 1973, or 3.5 percent, as in equation (2), below.

$$(2) \quad DINST_j = INT_j \cdot \frac{1}{i}$$

where

$DINST_j$ = debt instrument of the j -th family

INT_j = interest received by j -th family

i = average rate of interest.

The microdata from the SFCC provide evidence that interest rates do not vary systematically with income class [8], so that an average rate of interest is the best predictor of any family's rate of interest. This rate would be composed of the rates paid on credit union deposits, savings and loan deposits and commercial bank deposits, as well as on privately held mortgages, municipal bonds, corporate bonds, and U.S. government bonds. While very large denomination corporation and U.S. government bonds paid higher rates of interest, these represent a small enough percentage of interest-bearing assets that they do not have a noticeable effect on the total. Interest on municipal bonds (held almost completely by top wealthholders according to estate tax estimates) is much lower, close to the rate paid on bank savings, due to the tax-free status of this income.⁵

⁵Imputations of tax-free interest from municipal bonds were added to the returns by the Office of Tax Analysis (OTA) in the Treasury Department.

Since the average rate of interest received by SFCC families in 1962 was close to the rate paid on savings accounts, the 1973 rate on savings accounts was used to capitalize all interest in this estimate.

VI. ESTIMATION OF REAL ESTATE VALUE

The amount of property taxes paid on real estate was used to estimate real estate by equation (3), below:

$$(3) \quad RE_j = PT_j \cdot \frac{1}{eptr}$$

where

RE_j = gross real estate wealth of the j -th family

PT_j = property taxes paid on real estate by the j -th family

$eptr$ = average effective property tax rate in family's state of residence.

Property taxes are reported by itemizers on their income returns, and have been imputed to non-itemizers by the Office of Tax Analysis [5]. Effective property tax rates were calculated for each state from weighted averages of Census of Governments figures on median effective rates by county [9]. For 1971, they ranged from 0.4 percent in Hawaii to 4.5 percent in New Jersey, with values clustered around 2.1 percent. Although there were variations from county to county within states, they were much less than the variations between states. Thus, it appears worthwhile to use state-specific average rates rather than applying the national average to all families. However, to test whether there might be some bias affecting the estimate of total real property, the average 2.1 percent rate was applied to all families in a trial run. The aggregate estimate of personally held real property was very close to the estimate derived here from state-specific rates.

VII. CONSTRUCTING A SUB-SAMPLE OF ESTATE TAX RETURNS

Federal estate tax returns contain detailed information on the wealth and debt of the decedent, as well as its composition. In the early 1970s, when the gross estate of a decedent exceeded \$60,000 the executor of the estate was required to file a return with the Internal Revenue Service. Where *net* wealth (after deduction of debts and mortgages) exceeded \$60,000 estates were taxed under a progressive schedule. For 1972, estate-multiplier estimates indicate that about 6.1 percent of the population were in this top wealthholder group [10]. Substantial increases in the minimum filing requirement have reduced the proportion of filers to extremely low levels at present.

By utilizing a stratified sample of individual estate tax returns, a linear relationship between net wealth (gross wealth less all debts) and components of gross wealth may be estimated. Since the income tax information available in the OTA file is sufficient to generate estimates of corporate stock, debt instru-

ments, and real estate wealth, net wealth of each family was estimated as a function of these variables.

In order to use the estate tax return data for estimating the relationship between net wealth and asset ownership, a subsample of returns was drawn from the available data. Due to the great variability of net wealth relationships within this group, a large stratified sample was deemed appropriate, with optimal allocation employed in determining which observations would be sampled. A total sample size of 300 was selected on the judgment that this was large enough to allow sufficient sampling within the various strata, but of a reasonable size for computation purposes.

It has been demonstrated that the method of optimum allocation minimizes the portion of error due to sampling variability where there are substantial differences in the sizes of the strata and the variances within each stratum [11]. For a given sample size, n , equation (4), below, indicates the appropriate apportionment of the sample.

$$(4) \quad n_h = n \left(\frac{N_h s_h}{\sum_{i=1}^L N_h s_h} \right)$$

where

n_h = number to be sampled from a given stratum

N_h = population of a given stratum

s_h = standard deviation within the stratum

L = number of strata employed.

Since the primary purpose of this model is to estimate wealth across *all* wealth levels (rather than focusing on the very rich), observations with net wealth of more than \$300,000 were deleted from the large sample before subsampling was performed. Persons with negative net wealth were also deleted before sampling although their inclusion did not materially affect results. During the estimating procedure, separate regressions were run on stockholders vs. non-stockholders, and on persons 65 and over vs. those below retirement age. Age and stock ownership altered the variance of the estimates in some cases, but had little effect on the values estimated for the parameters.

VIII. ESTIMATION OF A REGRESSION OF NET WEALTH ON GROSS ASSETS

Although the wealth relationship was estimated using a variety of functional forms, including log-linear, a simple linear multiple regression with no intercept (equation (5), below) yielded the best fit.

$$(5) \quad NW_j = 1.041 CSTK_j + 1.484 DINST_j + 0.808 RE_j$$

(17.27)	(19.76)	(18.98)
(0.06)	(0.08)	(0.04)

This equation yielded an R^2 of 0.86, indicating that only 14 percent of net wealth is *not* explained by these three gross assets. Residuals were randomly distributed, showing no correlation of either underprediction or overprediction with the size of net wealth. All the explanatory variables were significant at the 0.001 level, and the overall F -statistic of 665 indicated strong explanatory power. T -statistics and standard errors are listed in the parentheses.

The coefficients are sensible in terms of what one would expect. While corporate stock has an estimated coefficient of roughly one, real estate typically carries substantial mortgage debt which reduces its effect on *net* wealth.⁶ Indirectly measured wealth (all other kinds than corporate stock, real estate, and debt instruments) is most correlated with debt instruments, which have a coefficient of 1.48. These assets, by their nature, have no debt associated with them.⁷ Prior studies have indicated that saving rates are higher among the self-employed (farmers, small businessmen) who would have large amounts of wealth measured only indirectly here.

Two basic assumptions have been made in using the estate tax data to estimate a relationship which will be applied to observations on the OTA file:

1. The *composition* of wealth will not differ substantially between the estate taxpayers and all living persons of the same wealth levels, although the *size* of total estate may be diminished by gifts, trusts, etc., in anticipation of death.

2. Composition of *family* wealth will not differ substantively from composition of *individual* wealth. Therefore, the regression estimate from individual estate tax returns may be applied to family unit data and yield sensible results.

An important question is whether a relationship estimated using data on top wealthholders may legitimately be applied to the entire population. However, when separate regressions were run on persons with wealth of less than \$80,000 (low-filers) and over \$300,000 (high-filers) the results were not substantially different. This suggests that wealth levels do not affect applicability of the regression outside the estate tax group. Based on this we apply the relationship to the entire population. The variance around the estimating relationship is much less serious when one considers that we are estimating the share of wealth of *groups*, not of any one family.

When applied to the OTA file, the method used here yields an estimated population total net wealth of \$2.6 trillion compared to the national balance sheet household sector net wealth of \$3.6 trillion for 1973 [12]. This was significantly closer than any of the many other functional forms tested in this study. Total corporate stock was estimated at \$669.2 billion versus a national balance sheet estimate of \$657.1 billion, and total interest-bearing assets were estimated here as \$892.6 billion compared to \$850.1 billion. The real estate total of \$774.2 billion compares with \$759.3 billion in the household sector balance sheet.

⁶A coefficient as *high* as 0.8 is probably due to the high correlation of consumer durables with real estate value.

⁷Debt instruments include all assets yielding interest income to the owner, including corporate and foreign bonds, U.S. government securities, loans and mortgages, state and local bonds, and all savings deposits, credit union accounts, and certificates of deposit.

IX. RESULTS OF THE WEALTH ESTIMATION

To describe more fully the distribution of wealth among families, its distribution among income classes as well as wealth classes will be described below.⁸ Wealth is importantly related to income, although not in a systematic manner. At very low income levels, part of the population consists of retired persons with modest sums of wealth who derive all of their income from this wealth and thus have a high ratio of wealth to income.

In order to develop population estimates of the wealth and income distribution, families were arrayed in ascending order by level of wealth (and subsequently, income) and percentile boundaries were determined using a computer routine designed for this purpose. The values computed from this procedure represent the upper boundaries of each percentile. Table 1 lists the delineating

TABLE 1
UPPER BOUNDARIES OF NET WEALTH CLASSES, 1973

Wealth Percentiles	Level of Wealth (\$)
Lowest 35	0.00
35-40	1,088.27
41-45	3,429.69
46-50	6,463.64
51-55	9,595.00
56-60	13,033.40
61-65	16,713.90
66-70	21,279.30
71-75	26,978.80
76-80	35,624.30
81-85	50,836.40
86-90	75,797.10
91-95	137,098.00
96	164,041.00
97	205,055.00
98	283,913.00
99	502,066.00
100	> 502,066.00

dollar values for 18 wealth groups, each consisting of five percentiles of the wealth distribution, with the exception of the first group which includes the 35 lowest percentiles which hold zero wealth, and the last five wealth groups which consist of only one percentile each. The 100th percentile represents the highest percentile of the distribution, and includes all families with wealth over \$502,066 in 1973.

Within each wealth class, values were first weighted by their respective sample weights and summed both within the class and cumulatively. Net wealth (and other variables analyzed here) were first multiplied by the unique weight attached to that family, and then summed across the class. Cumulative

⁸The relationship of wealth to age was also examined as part of the work toward the author's dissertation, and is the subject of an article currently in preparation.

percentages represent the summing across the distribution divided by the sum of weights up to that point.

For the income distribution, the same procedure was followed, using twelve income classes calculated by the same computer routine. The upper one percent of the income distribution were those receiving more than \$61,941 in census money income, while the upper decile included all families with more than \$23,881, as listed in Table 2.

TABLE 2
UPPER BOUNDARIES OF THE CENSUS MONEY INCOME
DISTRIBUTION, 1973

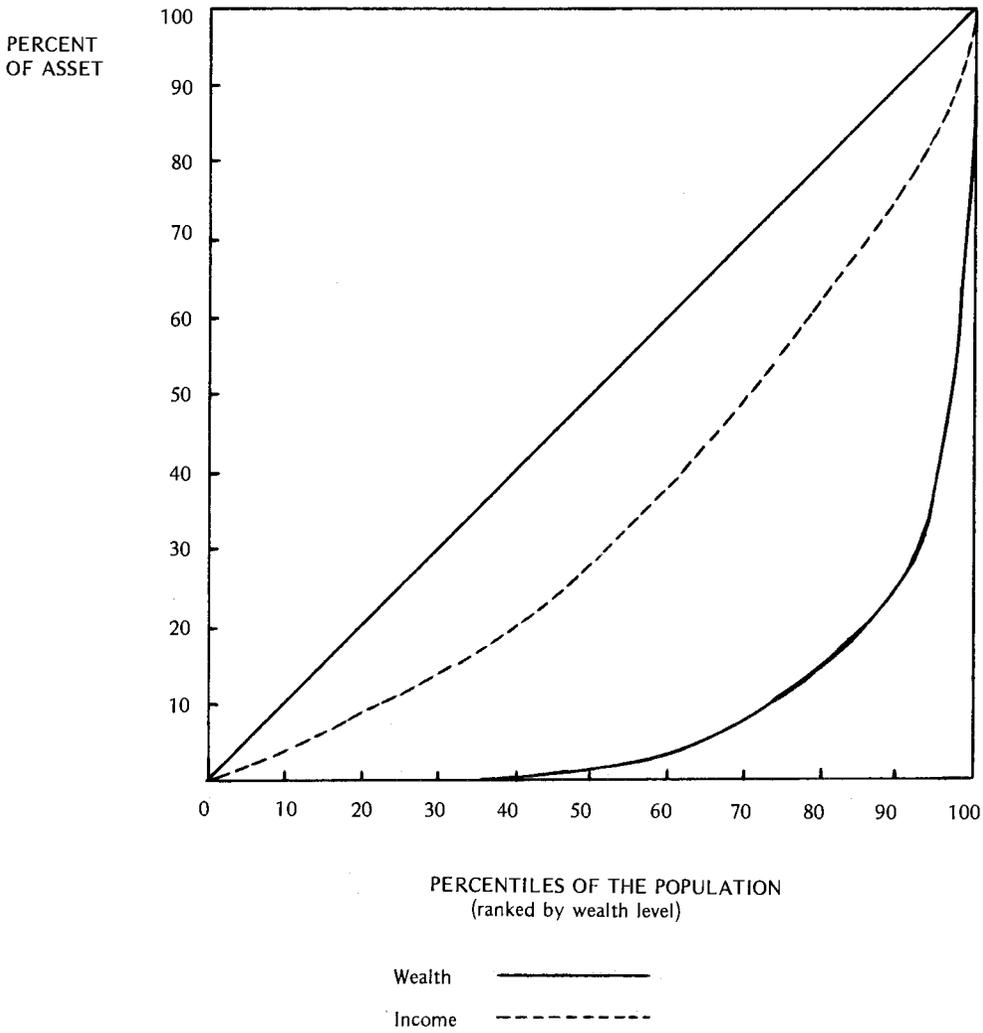
Income Percentiles	Level of Income (\$)
0-10	2,365.00
11-20	4,201.00
21-30	6,137.00
31-40	8,284.00
41-50	10,412.00
51-60	12,669.00
61-70	15,138.00
71-80	18,318.00
81-90	23,881.00
91-95	30,421.00
96-99	61,941.00
100	>61,941.00

X. DISTRIBUTION BY WEALTH CLASS

The cumulative distribution of wealth and income by wealth classes is portrayed in the Lorenz diagram in Figure 1. As one would expect, the wealth distribution is substantially more concentrated than is income by wealth class. Figure 2 shows the set of Lorenz curves representing the cumulative distribution of corporate stock, debt instruments, and real estate by wealth class.⁹ While real estate is significantly less concentrated than is total net wealth, corporate stock is clearly considerably more concentrated. Debt instruments are distributed more equally in the lower half of the distribution than is net wealth. The first 35 percentiles of the wealth distribution, representing approximately 24.6 million families, hold no measurable wealth but 16.8 percent of Census money income. The lower half of the distribution holds 1 percent of net wealth, 0.2 percent of corporate stock, 1 percent of debt instruments, and 1.8 percent of real estate, but 28.5 percent of income. The lower three-quarters of American families who hold 55.4 percent of income own only 11.2 percent of wealth. Almost one-third of privately held real estate rests with this group, but less than 2 percent of corporate stock.

⁹These might technically be termed "pseudo-Lorenz curves" since concentration of corporate stock is measured over wealth classes and not over classes of corporate stock ownership.

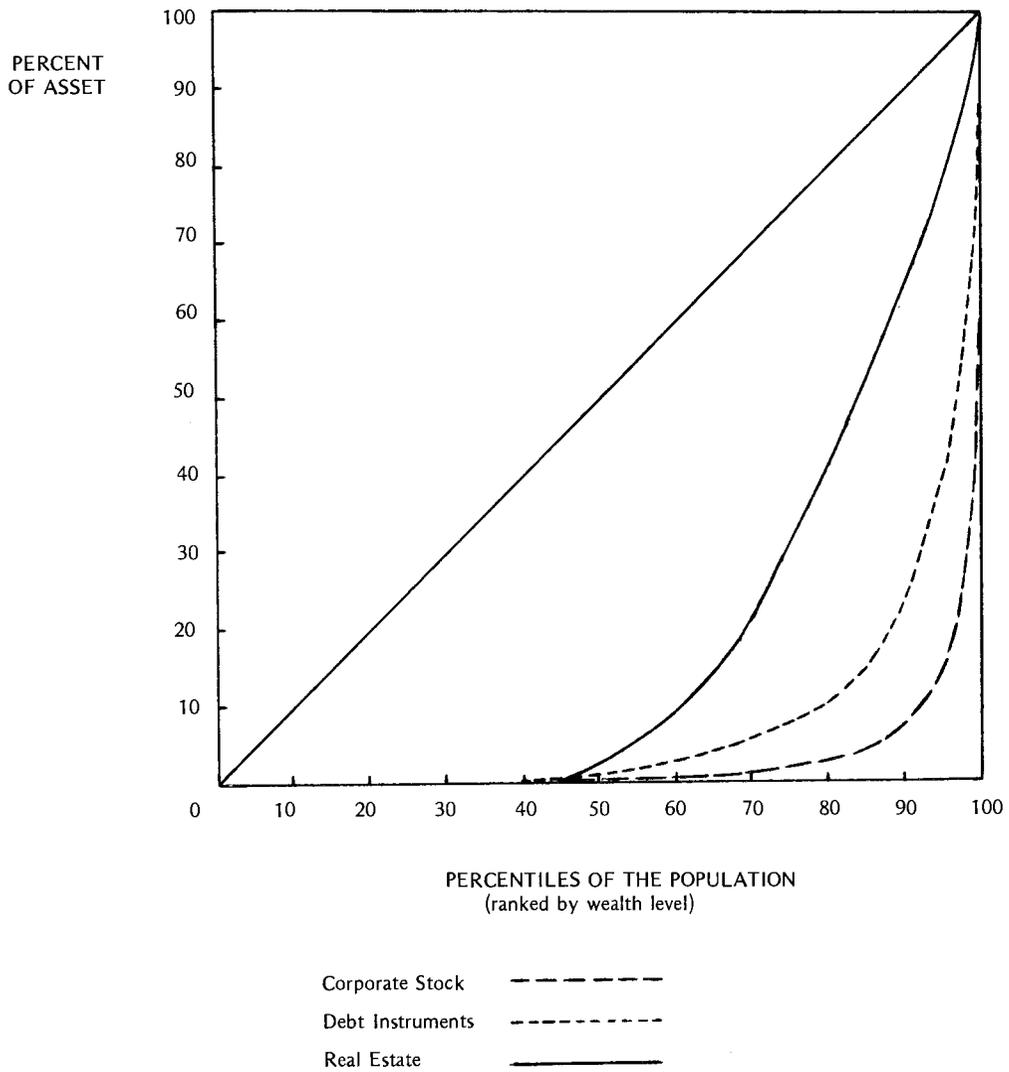
Figure 1.
LORENZ CURVES OF WEALTH AND INCOME
BY WEALTH CLASS, 1973



Source: Derived from the OTA file

Figure 2.

LORENZ CURVES OF CORPORATE STOCK, DEBT INSTRUMENTS,
AND REAL ESTATE BY WEALTH CLASS, 1973



Source: Derived from the OTA file.

In Table 3, the cumulative percentages used to construct Figures 1 and 2 are listed. The percentage of real estate held rises more rapidly than that of debt instruments, and particularly than corporate stock, with a reversal of this trend in the upper decile. Table 4 contains the *simple* percentages held by each wealth class. The highest 1 percent of the wealth distribution holds an estimated 32.6 percent of net wealth, although receiving only 8.7 percent of income. These

TABLE 3
CUMULATIVE PERCENTAGES OF NET WEALTH, INCOME, AND ASSETS HELD BY WEALTH CLASSES, 1973

Net Wealth Percentile	Net Wealth	Corporate Stock	Debt Instruments	Real Estate	Census Money Income
0-35	0.0	0.0	0.0	0.0	16.8
36-40	0.1	0.0	0.1	0.0	20.0
41-45	0.3	0.1	0.5	0.4	24.1
46-50	1.0	0.2	1.0	1.8	28.5
51-55	2.1	0.4	1.8	4.5	33.3
56-60	3.6	0.6	2.7	8.7	38.3
61-65	5.5	0.8	3.7	14.6	43.6
66-70	8.0	1.1	5.1	21.9	49.4
71-75	11.2	1.6	6.9	30.9	55.4
76-80	15.3	2.5	10.0	41.0	61.7
81-85	20.9	3.9	14.9	52.7	68.4
86-90	29.2	7.1	24.2	64.3	75.5
91-95	42.5	14.7	40.6	77.3	83.2
96	46.4	17.5	45.6	80.2	84.9
97	51.3	21.1	52.0	83.3	86.6
98	57.6	28.0	59.5	86.7	88.5
99	67.4	39.7	70.5	91.6	91.3
100	100.0	100.0	100.0	100.0	100.0

TABLE 4
SIMPLE PERCENTAGES OF NET WEALTH, INCOME, AND ASSETS HELD BY WEALTH CLASSES, 1973

Net Wealth Percentiles	Net Wealth	Corporate Stock	Debt Instruments	Real Estate	Census Money Income
0-40	0.1	0.0	0.1	0.0	20.0
41-45	0.3	0.1	0.4	0.3	4.1
46-50	0.6	0.1	0.5	1.4	4.4
51-55	1.1	0.2	0.8	2.7	4.8
56-60	1.5	0.2	0.9	4.2	5.2
61-65	2.0	0.2	1.0	5.9	5.3
66-70	2.5	0.3	1.4	7.4	5.7
71-75	3.2	0.5	1.9	9.0	6.1
76-80	4.1	0.8	3.0	10.1	6.2
81-85	5.6	1.5	4.9	11.7	6.7
86-90	8.2	3.1	9.3	11.6	7.1
91-95	13.3	7.6	16.4	13.0	7.7
Top 1%	32.6	60.3	29.4	8.4	8.7
Top 5%	57.5	85.3	59.4	22.7	16.8
Top 10%	69.8	92.9	75.8	35.7	24.5

families own 60.3 percent of privately held corporate stock, 29.4 percent of debt instruments, and 8.4 percent of real estate. The upper 5 percent of the distribution holds 57.5 percent of net wealth, 85.3 percent of corporate stock, 59.4 percent of debt instruments, and 22.7 percent of real estate, while receiving 16.8 percent of income.

Table 5 lists the percentage of families in each wealth class who hold any of the assets directly measured here. Debt instruments are most widely dispersed

TABLE 5
PERCENTAGE OF FAMILIES HOLDING CORPORATE STOCK, DEBT INSTRUMENTS, AND REAL ESTATE BY WEALTH CLASSES, 1973

Wealth Percentile	Corporate Stock	Debt Instruments	Real Estate
Population Average	17.2	49.2	43.0
Lowest 35	0	0	0
36-40	8.4	85.2	9.3
40-45	8.3	74.7	29.1
45-50	10.9	57.6	55.9
50-55	10.5	54.2	67.1
55-60	12.0	59.5	75.2
60-65	13.1	61.8	80.2
65-70	15.3	68.0	82.9
70-75	19.6	74.0	83.0
75-80	28.2	83.5	78.9
80-85	37.7	90.0	76.9
85-90	45.7	95.6	70.1
90-95	58.4	97.3	68.2
96	70.0	97.2	64.8
97	70.7	98.5	74.6
98	78.4	98.0	69.7
99	85.7	97.8	76.2
100	89.5	99.5	83.3

by this measure, due no doubt to bank savings and credit union deposits of small savers. While almost half of the population holds some positive amount, they appear to be more popular at low wealth levels. Below the 45th percentile less than 30 percent owned real estate, while in the upper quadrant roughly 75 percent were property owners. Some corporate stock was held by 17 percent of American families in 1973, but by only slightly over 10 percent of median families. Incidence of ownership increases slowly through the lower 75 percent of the wealth distribution. Within the upper quadrant it increases more rapidly; 58.4 percent of families in the 90-95th percentiles and 89.5 percent of the highest wealth percentile owned corporate stock.

XI. DISTRIBUTION BY INCOME CLASS

Income is related to wealth, since it consists in part of a flow of financial returns accruing from certain types of wealth (dividends from corporate stock, interest from all types of debt instruments, etc.). In addition, it is a primary

prerequisite for acquiring wealth. Without inheritance or luck in the lotteries, persons depend upon investing a portion of the income above and beyond that necessary to satisfy basic needs (however defined) in order to accumulate wealth.

The relationship between income and wealth is often inferred in consumption theory, where wealth is assumed to be correlated with income. Theories such as Friedman's "permanent income" hypothesis attempt to compensate in part for the incompleteness of using only a current income figure to describe a family or individual's financial position [13]. While future streams of income to a family may only be hypothesized (and generally the data are too scanty to serve as a valid basis for any hypothesis) the joint use of income and wealth enriches our knowledge of the total financial position of the family substantially.

For these reasons we will look at the distribution of wealth by income classes in much the same manner as was done by wealth classes, and will be able to compare it to the much more familiar concept of income distribution. In Figure 3, the Lorenz curves showing the cumulative distribution of wealth and income by income class indicate that the lower 50 percent of American families, ranked by total family income, receive 19.2 percent of income and hold an estimated 17.9 percent of net wealth. At low income levels, the proportion of wealth held exceeds the proportion of income held, indicating that some of these families derive a large part of that income from their wealth. Figure 4 represents the distributions of assets by income classes, and the cumulative percentages of wealth, income, and assets of these income classes are listed in Table 6. The

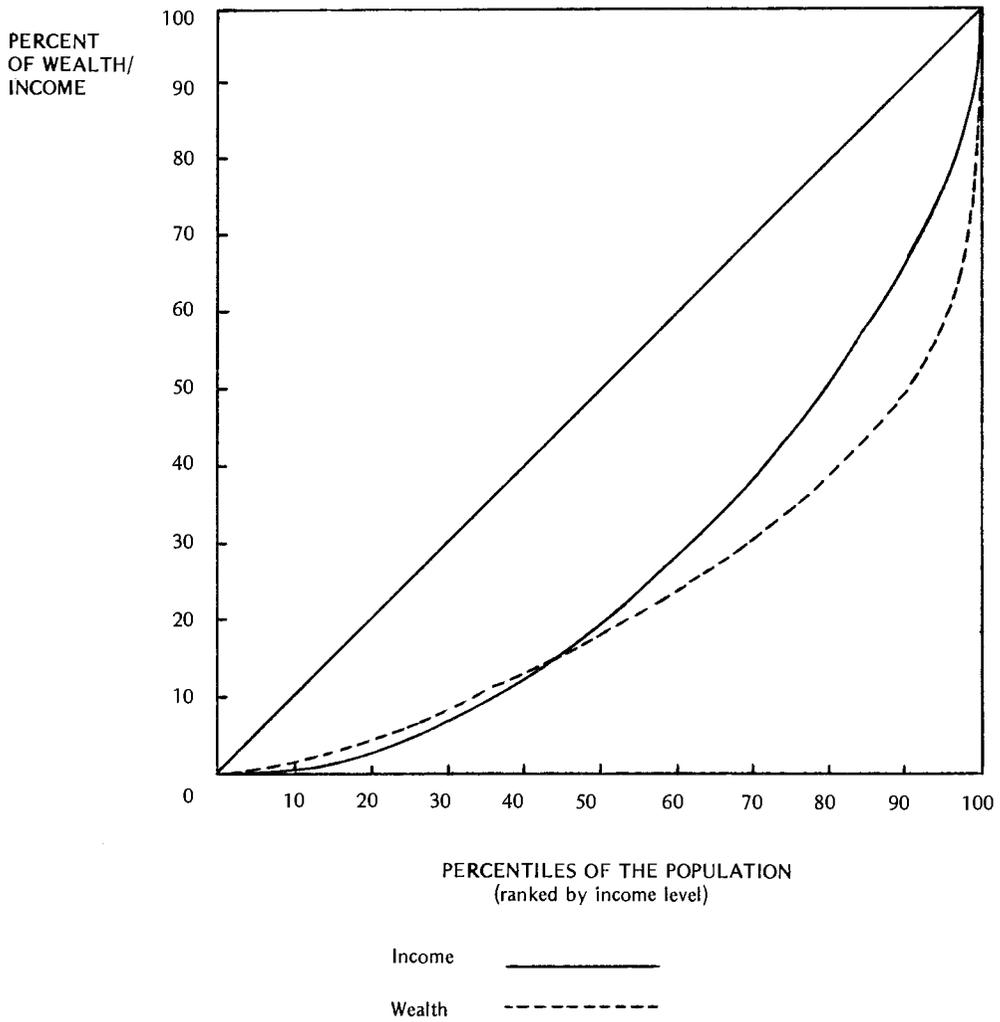
TABLE 6
CUMULATIVE PERCENTAGES OF NET WEALTH, INCOME, AND ASSETS HELD
BY INCOME CLASSES, 1973

Census Income Class	Census Money Income	Net Wealth	Corporate Stock	Debt Instruments	Real Estate
0-10	0.5	1.8	1.9	2.1	1.2
11-20	2.9	3.6	3.3	4.5	2.3
21-30	6.8	7.3	5.5	9.7	4.7
31-40	12.2	12.4	8.2	16.2	9.4
41-50	19.2	17.9	11.7	22.0	16.3
51-60	27.9	23.7	15.3	27.7	24.9
61-70	38.4	30.1	18.5	33.9	35.3
71-80	51.0	38.4	22.6	41.9	48.6
81-90	66.7	49.9	29.1	52.8	66.7
91-95	76.9	58.8	36.5	61.3	78.0
96-99	88.8	75.7	52.8	80.0	91.9
100	100.0	100.0	100.0	100.0	100.0

lower 90 percent of families receive 66.7 percent of income and hold an estimated 49.9 percent of net wealth. Corporate stock is heavily concentrated in the upper 5 percent of the income distribution, just as it is in the wealth distribution. Debt instruments are more heavily represented than is real estate at lower income levels.

Figure 3.

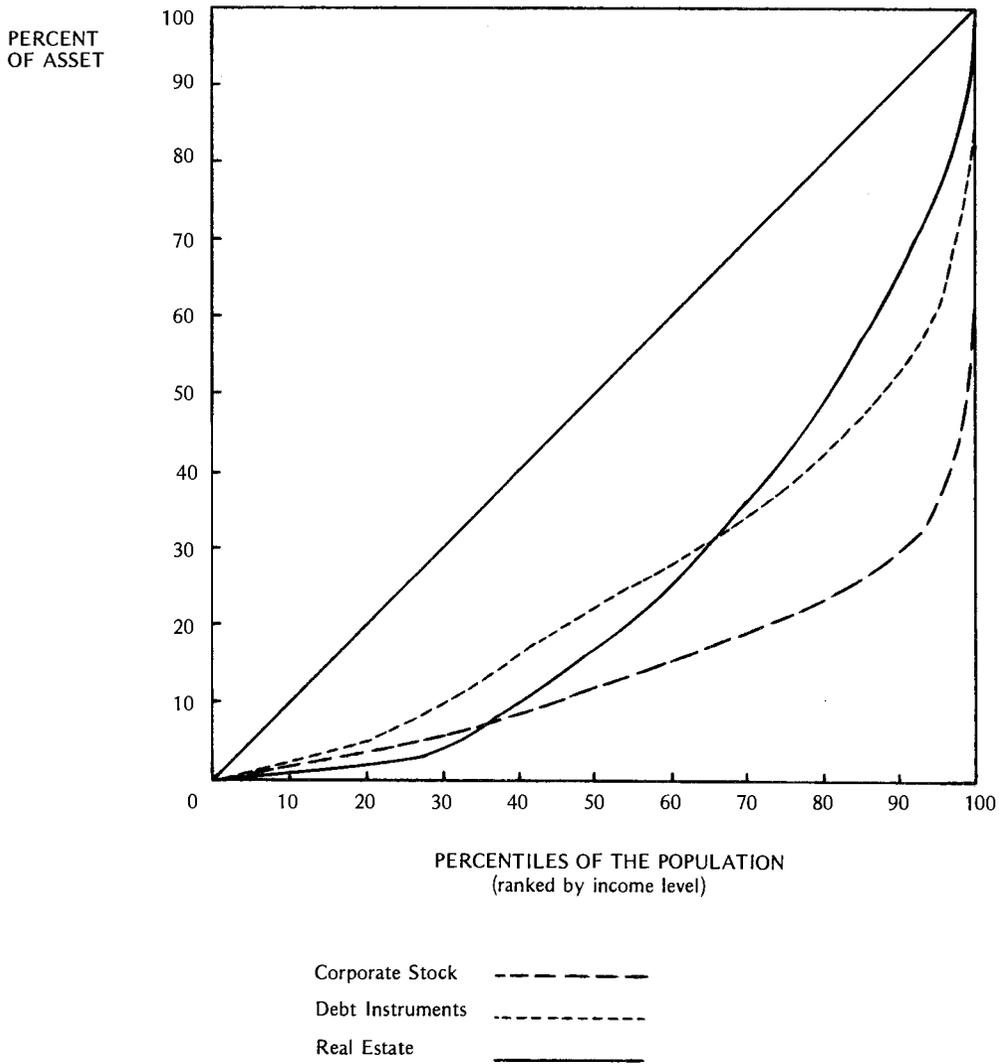
LORENZ CURVES OF WEALTH AND INCOME BY
INCOME CLASS, 1973



Source: Derived from the OTA file

Figure 4.

LORENZ CURVES OF CORPORATE STOCK, DEBT INSTRUMENTS,
AND REAL ESTATE BY INCOME CLASS, 1973



Source: Derived from the OTA file

Table 7 includes the simple percentages of wealth, income, and assets held by each income class, and Table 8 lists the proportion of families in each class owning nonzero amounts of each. Share of wealth is higher than share of income in the highest 5 percent of the income distribution, where 23.2 percent of income and 41.2 percent of wealth is concentrated. This group owns 63.5 percent of corporate stock, 38.7 percent of debt instruments, and 22 percent of real estate. In the middle of the distribution (percentiles 31-70) each decile of 7.3 million families holds around 3 percent of total corporate stock and 6 percent of debt instruments, but the proportion of real estate increases from 4.7 percent in the

TABLE 7
SIMPLE PERCENTAGES OF NET WEALTH, INCOME, AND ASSETS HELD BY CENSUS MONEY INCOME CLASSES, 1973

Census Class	Net Wealth	Census Money Income	Corporate Stock	Debt Instruments	Real Estate
Lowest 10	1.8	0.5	1.9	2.1	1.2
11-20	1.8	2.5	1.4	2.4	1.1
21-30	3.7	3.9	2.2	5.2	2.4
31-40	5.1	5.5	2.7	6.5	4.7
41-50	5.5	7.1	3.5	5.8	6.9
51-60	5.9	8.7	3.6	5.7	8.7
61-70	6.4	10.5	3.2	6.2	10.4
71-80	8.3	12.6	4.1	8.0	13.3
81-90	11.4	15.7	6.5	10.9	18.1
91-100	50.1	33.3	70.9	47.2	33.3
Top 1%	24.3	11.2	47.2	20.0	8.1
Top 5%	41.2	23.2	63.5	38.7	22.0

TABLE 8
PERCENTAGE HOLDING NET WEALTH, CORPORATE STOCK, DEBT INSTRUMENTS, AND REAL ESTATE BY INCOME CLASS, 1973

Income Percentile	Percentage of Class Holding			
	Net Wealth	Corporate Stock	Debt Instruments	Real Estate
Population Average	64	17	49	43
0-10	15	4	13	4
11-20	26	6	22	7
21-30	44	11	36	15
31-40	56	11	40	30
41-50	66	12	44	41
51-60	75	13	51	50
61-70	81	15	57	57
71-80	88	20	67	65
81-90	93	28	74	74
91-95	97	41	84	80
96-99	98	59	91	83
100	100	81	97	88

fourth decile to 10.4 percent in the seventh. The highest decile has over four times the wealth of the group immediately below it, while only slightly more than twice the income.

The proportion of persons in each income class holding wealth, and particularly assets measured directly here, rises steadily with income. All of the families in the highest 1 percent of the income distribution are wealthholders, while less than 15 percent of the families in the lowest decile hold positive net worth. In the middle of the income distribution, at the fifth decile, 66 percent of families have positive net worth, but only 12 percent own corporate stock. Over 40 percent hold debt instruments and/or real estate. By the ninth decile, representing family income in 1973 dollars of roughly \$24–62,000, 93 percent of families were wealthholders, with 28 percent owning some corporate stock. In the highest decile, over half of all families held corporate stock, more than 90 percent held debt instruments, and over 85 percent owned real estate.

XII. SUMMARY OF RESULTS

Based on the estimating procedures outlined in this paper, net wealth was estimated at the family level for 45,030 units in the OTA file. Population estimates were derived by multiplying the wealth (or income) of each family by the unique weight associated with it, constructing percentile boundaries within the distribution, and summing within these boundaries. From these, percentages of wealth or income held by each class were constructed, and used to plot Lorenz curves of concentration. The Gini coefficients computed from these data are summarized in Table 9, below.¹⁰

TABLE 9
GINI COEFFICIENTS OF CONCENTRATION, 1973

Variable	Wealth Distribution	Income Distribution
Net Wealth	0.81	0.56
Census Income	0.36	0.46
Corporate Stock	0.94	0.72
Debt Instruments	0.85	0.51
Real Estate	0.63	0.49

As one would expect, wealth and each of the assets is more concentrated by wealth class than by income class. Corporate stock shows a high degree of concentration viewed from either perspective, however, at 0.94 by wealth class and 0.72 by income class. Income by wealth class is the least concentrated of any of the measured variables, with an estimated Gini coefficient of 0.36.

The top 1 percent of families in the wealth distribution in the United States held an estimated 32.6 percent of net wealth and received 8.7 percent of income in 1973, while the top 1 percent of families in the income distribution held 24.3

¹⁰These are computed for wealth classes and for income classes, so are not pure Gini coefficients in the measurement of asset concentration.

percent of wealth and received 11.2 percent of income. The highest wealth percentile held 60.3 percent of corporate stock, 29.4 percent of debt instruments, and 8.4 percent of real estate, while the highest income percentile held 47.2 percent of corporate stock, 20 percent of debt instruments, and 8.1 percent of real estate. The upper 10 percent of wealthholders held almost 70 percent of net wealth and 93 percent of corporate stock. The upper 10 percent of the family income distribution held over 50 percent of net wealth and 70 percent of corporate stock.

Only 1 percent of net wealth rests with the lower half of the wealth distribution. The lower three quartiles owned approximately one-third of privately held real estate, but less than 2 percent of corporate stock. As one would expect, composition of wealth changes with position in the distribution, as modest savings accounts are prevalent at lower levels, growing amounts of real estate are seen in the middle levels, and corporate stock becomes important at very high levels. The same trends are apparent in the composition of wealth in different income classes. As Table 7 indicates, there are low-income families with wealth from which they draw some of that income (41 percent in the lower two income deciles). Over 97 percent of families in the highest income decile (those earning \$23,881 or more) were wealthholders, and they owned more than half of all personally held net wealth.

XIII. COMPARISON WITH OTHER ESTIMATES

While these microdata estimates are quite close to the national aggregates in the case of corporate stock and debt instruments, the total net wealth estimate of \$2.6 trillion is lower than the adjusted national balance sheet figure for 1973 of \$3.5 trillion. Surveys have generally produced lower total estimates than the national aggregates and this appears to be a characteristic of this method also. Part of this is due to differences in measurement at the aggregate level.

It is instructive to compare, where possible, the distributional results of this estimating method with the work of other researchers in the field. Due to differences in the coverage of the data employed and varying methodologies, only general comparisons can be made. The estate multiplier estimates of the share of the top 1 percent of *individual* wealthholders made by Lampman and Smith ranged from 24.9 percent to 33.0 percent over the post-war period [2]. The top 1 percent of *families* are estimated by this study to hold 32.6 percent of all personal wealth. That family wealth would be more concentrated than individual wealth is not surprising, since spouses and children within a family possess wealth in their individual names.

Special tabulations from the 1962 SFCC study show 24 percent of net wealth held by the upper 1 percent of *consumer units* [1]. The concept of consumer unit is fairly close to that of the census family used on the OTA file. The wealth definition used in the 1962 study is less inclusive, however. Debts were deducted from gross wealth only if they were secured by assets covered in the survey, and no business debts were included despite the fact that the value of businesses and professional practices were treated as assets. Although the 1973 estimate shows 32.6 percent held by the highest 1 percent of families, versus the survey

estimate of 24 percent in 1962, comparability problems preclude a really strong statement that concentration has increased.

Empirical studies of wealth concentration in the mid-1800s by Gallman and Soltow estimated that the upper 10 percent of wealthholders held 70 percent or more of net wealth, and calculated Gini coefficients of 0.82–0.83 [14]. A recent estimate of household wealth by Wolff, also based on a merged microdata sample of Census and IRS data, combined capitalization of some income flows with imputations for other forms of wealth, including consumer durables explicitly [15]. His 1969 estimate yielded a Gini coefficient of 0.81 for net worth, identical to my 1973 estimate, and a mean net worth of \$39,926 which is slightly higher than my estimate of \$37,657.

For 1970, Lebergott estimated the distribution of wealth by *income* class and calculated that the upper 1 percent of family units in the income distribution held 17 percent of net wealth and 35.8 percent of corporate stock, lower than the 24.3 percent of wealth and 47.2 percent of corporate stock I have estimated here. Lebergott also used Census and IRS data, but in a more aggregated form and with differences in methodology which must be taken into account when comparing results [16].

XIV. SUMMARY AND CONCLUSIONS

This paper has outlined a method of estimating family wealth from income tax microdata merged with census files. Analysis may thus be extended below the level of the very few who file estate tax returns, without the great expense of time and money required for good surveys.

The resulting estimates indicate a high concentration of wealth even *below* the top wealthholding group. The upper 10 percent of the wealth distribution held almost 70 percent of net wealth and 93 percent of corporate stock. Real estate was more widely distributed, but over 35 percent was held by the top 10 percent of families, and less than one-third belonged to the lower three-quarters of American families.

The richness of the data base in other economic and demographic information provides the potential for much more detailed analysis of certain aspects of wealthholding. For example, census data on the age of the head of household makes possible the analysis of wealth by age group.¹¹ In addition, more recent IRS–Census merges could be used for new cross-sectional estimates of distribution, and comparisons made across time between the two.

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