FURTHER ESTIMATES OF PERSONAL WEALTH IN THE UNITED STATES USING THE ESTATE MULTIPLIER TECHNIQUE

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The measurement of personal wealth in the United States has in recent years received considerable attention. This interest has been stimulated by a number of factors, not the least of which is the public's fascination with the topic. Accurate and comprehensive estimates of wealth, however, are difficult to obtain on a regular basis, particularly for the wealthiest one to two percent of the population. Several alternative approaches, each with its own merits, have been developed [18]. This paper looks at the estate multiplier technique, which utilizes administrative records to estimate the wealth of the most affluent segment of the population. The focus of this paper is on the final estimates of wealth for 1982 and the improved sampling techniques and multipliers used to develop these estimates. As noted elsewhere at these meetings [9,10,18], it is our view that in order to estimate the wealth of the entire population, this approach and others must be blended to provide the most accurate measurement.

The first section of this paper presents a brief look at the estimation technique. This is followed by new estimates of the personal wealth of individuals in 1982 based on the application of the estate multiplier technique to estate tax returns filed between 1982 and 1984. These results are the first based on a new sample design which reduces the sampling variability and the effects of inflation. The next section contains a more detailed description of the estate multiplier technique and a discussion of the development of the new multipliers and sample. Then several methodological issues are raised with respect to the application of the estate multiplier technique. The paper concludes with our plans for future research.

OVERVIEW OF THE STUDY

The estate multiplier technique uses data reported on estate tax returns filed for the deceased to estimate the wealth of the living population. The estate tax return is a valuable source of economic information, which -- having been prepared from records, generally by highly skilled people, and under exacting requirements of law -- represents a fairly accurate assessment of an individual's wealth.
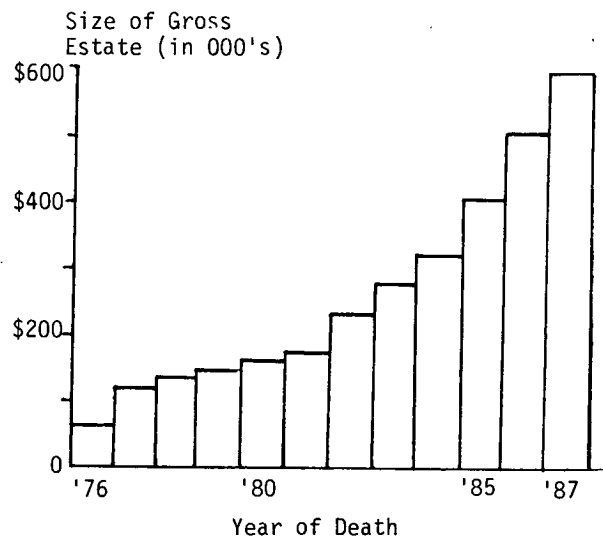
Despite its great potential for use in research, the estate tax return is, nevertheless, an administrative record, which primarily reflects the needs of administrators and only indirectly reflects the interests of scholars. Its function as an administrative document places constraints on its use for research purposes [17]. For example, Federal estate tax returns are required to be filed only for decedents leaving rather large estates.

The filing requirement for decedents dying in 1987 is $600,000 of gross estate. This base has increased annually from the $60,000 filing requirement in effect in 1976. Because the estimates of wealth are based on those estates subject to filing a return, the higher filing requirement restricts the population for which these estimates can be made.

Figure A shows the filing requirements in effect since 1976. Using the estate multiplier technique, wealth can be estimated for those individuals with assets in excess of the filing requirement in effect that year.

Figure A.--Estate Tax Return Filing Requirements, 1976-1987

Size of Gross Estate (in 000's)

Year of Death

Summary estate tax return data and preliminary estimates of personal wealth for each filing year are produced annually by the Statistics of Income Division of the Internal Revenue Service, with comprehensive personal wealth estimates produced every three years. The final personal wealth estimates for 1982, presented in this paper, are based on returns filed during 1982 through 1984 for individuals dying in 1982. As the estate tax return is not required to be filed until nine months after the date of death, most returns for individuals dying in 1982 are filed in 1982 and 1983. However, because an extension of time for filing the return can be obtained, a limited number of returns may be filed in 1984, as well. By sampling returns filed over the series of years 1982 to 1984, we can capture the returns filed for most individuals who died in 1982.

This "year-of-death" approach represents a change in scope from past studies [4,19,20,23]. In the past, wealth estimates were based on the estate "filing year" sample, representing returns filed in a particular year for deaths that occurred over several years. The wealth

estimates generated from a sample selected on a filing year basis, thus, reflected the value of wealth held during several years, unadjusted for annual rates of inflation. The advantage of a year-of-death sample is that the wealth represents that of a given year, rather than a series of years and so, more closely reflects wealth at a particular point in time.

ESTIMATES OF PERSONAL WEALTH IN 1982

Final estimates of the personal wealth of individuals in 1982 show that there were approximately 4.5 million people with gross assets of $325,000 or more. These individuals, hereafter referred to as "top wealthholders," represented only 2.8 percent of the nation's adult population and held total assets of $3.2 trillion. Their net worth -- the value of their assets after reduction for debts -- was over $2.7 trillion and made up approximately 29.6 percent of the wealth in the United States in 1982 [8].

In contrast, during 1976, fewer than two million people had gross assets of $300,000 or more, the closest amount for which data are available. The net worth of these top wealthholders in 1976 was over $1.0 trillion, or nearly 22 percent of the net worth of all individuals in the country [8].

When we look at wealthholders by sex for the two study years, we can see a shift in wealth. Female wealthholders, as shown in Figure B, represented 38.3 percent of the 4.5 million top wealthholders in 1982. In 1976, only 32.8 percent of the individuals with gross assets of $300,000 or more were women.

Figure B.--Wealthholders with Gross Assets of $325,000 or More, by Sex, 1982

Sex of Decedent	Number (in thousands)	Total Assets (in billions)
All	4,479	$3,218
Male	2,763	1,916
Female	1,715	1,302

Composition of Assets

In 1982, real estate constituted the greatest share of the assets held by all individuals with gross assets in excess of $500,000. (See Figure C.) This continued the trend first observed the previous year for top wealthholders [19]. In contrast, estate multiplier estimates of wealth for 1976 and earlier years showed corporate stock to be the most commonly held asset. In any case, real estate and corporate stock together accounted for more than 62 percent of the assets of the top wealthholders in 1982. Corporate stock, long the most prominent asset in the portfolio of top wealthholders, declined, however, from over 35 percent of the assets in 1976 to 30 percent in 1982. This was likely a result of the decline in the stock market [16], as well as a reflection of the increase in the value of real estate during that period; the

Figure C.--All Top Wealthholders with Gross Assets in Excess of $500,000, by Asset Type and Sex, 1982

Type of Asset	Percent Distribution of Total Assets		
	Total	Males	Females
Total..................	100.0%	100.0%	100.0%
Cash....................	8.4	7.4	9.8
Corporate stock.......	29.9	29.7	30.3
Bonds..................	7.0	5.5	9.4
Life insurance........	1.2	1.8	0.3
Notes and mortgages...	4.7	5.1	4.2
Real estate...........	32.5	32.7	32.2
Noncorporate business assets...............	7.8	9.2	5.5
Other assets..........	8.5	8.6	8.3

Dow-Jones Industrial average fell 9.3 percent between 1976 and 1982 [1], while the consumer price index for home purchases rose 67.2 percent during the same period [2]. These measures of the market condition illustrate the reasons for the shift in the composition of the assets of the wealthy.

Bonds and noncorporate business assets, the so-called secondary assets held by top wealthholders, also switched positions of importance. The share of assets held as bonds declined from over 9 percent in 1976 to just 7 percent in 1982 and noncorporate business assets increased from 5 percent of the assets in 1976 to nearly 8 percent in 1982.

A look at the asset composition by sex shows that the share of the wealth held in the form of real estate and corporate stock was remarkably similar for men and women. On the other hand, the difference in the proportion of the wealth held as secondary assets is noteworthy. This is most evident when observing the composition of the wealth held by each sex as noncorporate business assets and bonds. Noncorporate business assets made up 9 percent of the assets of men in 1982, compared with 5.5 percent for women. Conversely, wealth held by females was typified by a greater concentration held as bonds, over 9 percent as opposed to only 5.5 percent for males. An examination of the other assets shows that notes and mortgages and life insurance constituted a more significant portion of the assets of men, while cash represented a greater share of the assets of women.

An examination of the composition of the assets held by the wealthiest of the top wealthholders, those with net worth of $1,000,000 or more, reveals some sharp differences with the portfolios of top wealthholders who have not yet attained millionaire status. (See Figure D.) Real estate, the most commonly held asset in the portfolio of all top wealthholders, dominates the assets of those top wealthholders with net worth less than $1,000,000. Nearly 42 percent of their assets were held as real estate, while only 20 percent of their assets were held as corporate stock. On the other hand, real estate comprised just 25 percent of the assets of millionaires, while over 38 percent of their assets were held as corporate stock.

Figure D.--All Top Wealthholders by Size of
Net Worth*, Percent of Total Assets
by Asset Type, 1982

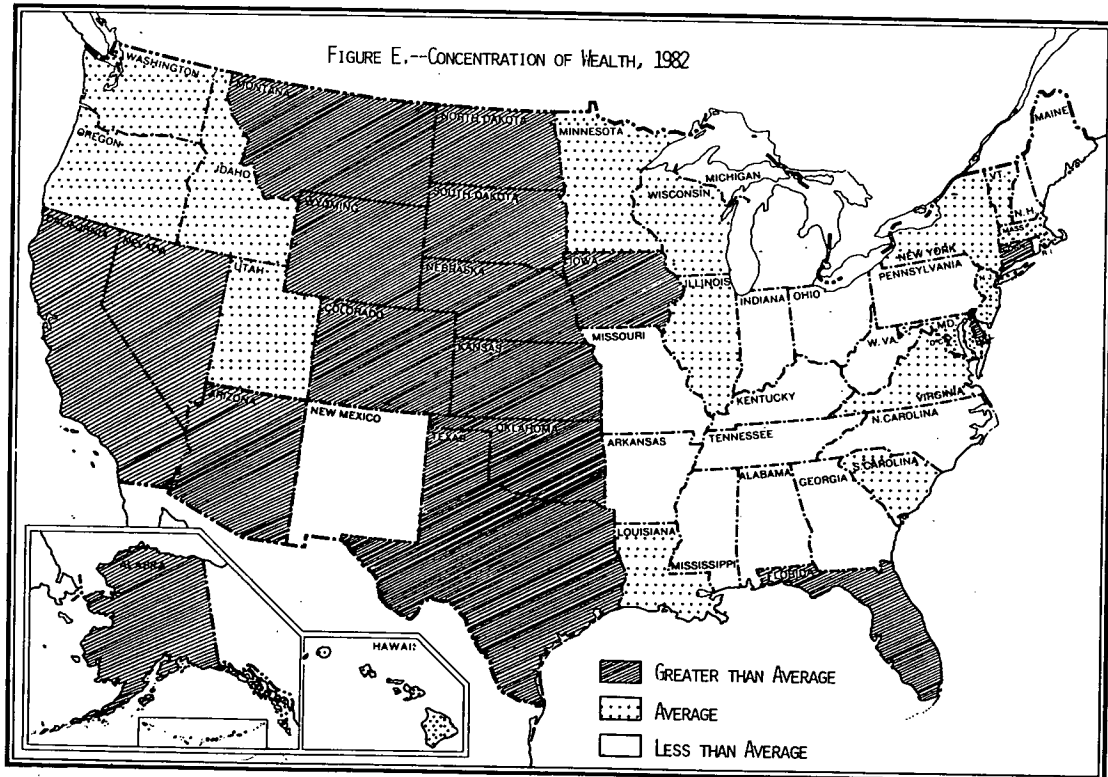| Type of Asset	Size of Net Worth	
	Under $1 Million	$1 Million or more
Total assets.........	100.0%	100.0%
Cash.................	10.5	6.5
Corporate stock......	20.1	38.5
Bonds...............	4.8	9.0
Life insurance.......	2.0	0.6
Notes and mortgages..	5.3	4.2
Real estate.........	41.6	24.6
Noncorporate business assets..............	7.1	8.3
Other assets.........	8.5	8.4

* Gross assets in excess of $500,000.

Cash and bonds together represented just over 15 percent of the assets of both groups of top wealthholders but were held in vastly different proportions. Whereas bonds represented just under 5 percent of the assets of the less wealthy group, they were, at 9 percent of the assets, the third most common asset held by millionaires. Proportionately, millionaires held more corporate stock, bonds, and non-corporate business assets and less real estate, cash, notes and mortgages, and life insurance

than the top wealthholders with net worth under $1,000,000.

Geographic Distribution of Wealth

A look at the geographic distribution of wealth also shows some interesting rela-tionships. Nearly 700,000 people or more than 15 percent of the top wealthholders in the United States live in California. This is more than double the number of top wealthholders in the second wealthiest state, Texas. New York, now third, had the most wealthy individuals in 1976. In looking ahead, one would expect that the effect of the recent decline in oil prices on the economy of Texas, coupled with Florida's rapid growth and attractive tax policy for the wealthy, may result in Florida becoming the second wealthiest state by the end of this decade.

The ratio of wealthy individuals to the adult population provides a look at the distribution of wealth undistorted by the large populations of certain states. California, the most popu-lous state, has an above average concentration of wealth with 15 percent of the top wealth-holders, but only 11 percent of the nation's adult population. While there are a large number of wealthholders in New York and Illinois, there is only an average proportion of top wealthholders in these states. As shown in Figure E, wealth appears to be more heavily concentrated in the more rural states west of the Mississippi River. On the other hand, the states in the so-called 'Rust Belt' and the south -- with one of the principal exceptions being Florida -- have a lower than average proportion of wealthy individuals.

Figure E.--Concentration of Wealth, 1982

GREATER THAN AVERAGE
AVERAGE
LESS THAN AVERAGE

ESTATE MULTIPLIER TECHNIQUE

The estate multiplier method [7,11,21,22] takes deaths for a given year as a stratified sample of the living population for that year. Assuming that death draws a random sample from the living population within specific age/sex classes, data from estate tax returns filed for the deceased can be weighted using the inverse of the population mortality rates to approximate the wealth of the living. The relationship can be specified as follows:

$$P_{ij} = E_{ij}/M_{ij}$$

where

P_{ij} is the estimated wealth of the population,

E_{ij} is wealth measured from estate tax returns, and

M_{ij} is the mortality rate for each population stratum.

Death, however, is not a truly random event. The probability of "death's selection" of an individual depends on various factors. There is much evidence, for example, that the mortality rate of the wealthy is actually more favorable than that of the population as a whole [6]. Studies correlating mortality rates with income, occupation, education, and socioeconomic status have substantiated the inverse relationship between social class and mortality [3,5,14].

Although these and several other factors are known to influence mortality, the general U.S. population mortality rates, published annually by the National Center for Health Statistics [12] from its tabulations of registered deaths (in conjunction with Census Bureau population estimates), are stratified only by age, race, and sex. Therefore, in order to accurately reflect the mortality experience of the wealthy, an adjustment to the general mortality rate is needed.

Improving the Multipliers

The mortality rates assumed to approximate those of male top wealthholders have, in the past, been based on the mortality experience during a four-year period of the Metropolitan Life Insurance Company for preferred risk "Whole Life" policyholders with large life insurance policies. This is based on the assumption that the mortality experience of these generally wealthy policyholders is representative of that of the wealthy population. The general white male population mortality rates are adjusted by differentials based on the divergence of the mortality experience of Metropolitan Life's male policyholders from the mortality rates of the general male population. Because Metropolitan does not compute statistics on female mortality, mortality rates for female wealthholders were generated by applying the male differentials to the general rates for white females. Multipliers were then derived by taking the inverse of the adjusted mortality rates for each decedent according to age and sex. These multipliers, applied to sampled estate tax return data, produced wealth estimates for the wealthy segment of the living population.

With the cooperation of Metropolitan Life, this procedure has been followed since personal wealth was first estimated by the Statistics of Income Division for 1962. However, the mortality differentials computed for large policyholders show some unevenness when this series is considered. In order to reduce the effect of the sampling variance of death, new mortality differentials and multipliers were computed using regression analysis of data for the same class of policyholders for 1969, 1972, 1976, and 1982.

Further modifications are being made to make the multipliers more age-specific. The mortality information provided by Metropolitan Life is based on five-year age groups for those people between 50 and 85 years of age. The mortality data for older individuals (those over 85 years of age), however, are grouped in one set. The data for those under 50 years of age are provided by ten- and twenty-year age groups. A look at the mortality rates of individuals between the ages of 40 and 49 reveals that the occurrence of death is 65 percent greater for those in the 45 to 49 year group than for those in the younger five-year group. Thus, a multiplier based on the overall mortality of individuals in this ten-year age group has the effect of overstating the wealth of the older of these decedents. Similarly, there is an understatement of wealth for the younger of these decedents. The infrequency of these deaths and the associated high sampling variability of death in this age group therefore reduces the accuracy of wealth estimation for this age class. In order to improve our wealth estimates, as a first step, multipliers are being developed by five-year age groups for those under age 50 and those over 85 years of age. These modifications will provide greater precision to the estimates.

However, a potential error in the wealth estimates still exists when using multipliers based on five-year age groups. This is the result of the sampling variance of death which yields high or low estimates depending upon the distribution of deaths within each five-year age group. Thus, the multipliers should be age-specific to further refine the wealth estimates.

ASSESSMENT OF ENHANCEMENT EFFORTS

In addition to the preparation of annual estate and personal wealth data, much of the ongoing work at the IRS is devoted to the improvement and the expansion of the estate multiplier technique. With the implementation of several modifications, we can now present the results of these research efforts. This is the first stage of a concerted effort to produce accurate estimates of wealth for the wealthiest segment of the population. The use of a year-of-death file selected over a three-year period has improved the estimates in two significant areas. The sampling error and the effects of inflation have been reduced.

Sampling Error

The strength of the estimates of wealth using the estate multiplier technique, in part, lies in the large sample size. The sample of 19,000 returns selected in 1983, on which the preliminary estimates of wealth in 1982 were based, was considerably larger than the samples selected for the Survey of Consumer Finances and the Census Bureau's Survey of Income and Program Participation wealth study for comparable levels of wealth. Yet, despite our very large overall sample size, the limited number of returns filed each year for young and very wealthy decedents can make results for these categories subject to considerable sampling error.

The achieved selection probabilities of death's sample of young and very wealthy decedents in a given year can distort our estimates of the wealth of the living. Death "samples" at high and low rates, which tend to average out over time, but which can result in large short-term fluctuations. When death "selects" a smaller sample -- that is, fewer deaths for a limited population during a sample year -- wealth estimates will be lower than the true population values. Likewise, with too large a sample, estimates are produced which overstate the wealth of the population.

The final estimates of wealth for 1982 have incorporated two modifications from recent-year estimates designed to reduce the variability of death's annual sample selection. First, the sample of estate tax returns was redesigned to be stratified by age as well as size of gross estate. Whereas all returns of the very wealthy (those with gross estate $5,000,000 or more) were selected for past studies, the returns of the young -- before 1982 -- were selected at rates directed by the size of gross estate. Thus, the high sampling variance already present because of the limited number of returns of young decedents was increased further by sampling at rates less than 100%. Starting in 1982, all estate tax returns, regardless of the size of gross estate, were selected for decedents under 45 years of age.

To further reduce the sampling variability, the final estimates for wealthy and young individuals are based on returns filed during a three-year period. Since the estate multiplier technique is based on the selection of returns which reflect deaths during a one-year period, it is necessary to adjust the weights of the returns of the young and wealthy. The original estate weights (W_i) appropriate to the sample year and sampling strata were reduced to $W_i/3$. This modification further reduces the sampling variability and presents a more accurate estimate of the type and amount of wealth of the young and very wealthy.

Additional reduction of the sampling error associated with the use of the estate multiplier technique for high levels of wealth may be accomplished by supplementing our estimates with outside information. We are studying the possibility of using data from the annual Forbes magazine estimates of the 400 wealthiest individuals in the United States in conjunction with IRS data for these levels of wealth. While many difficulties exist in using this source, given the definitional differences between the two sources, the use of the Forbes data nevertheless offers promise. This study is discussed in detail by McCubbin [9].

Mortality Rates

The accuracy of the estate multiplier estimates depends, to a great extent, upon the adjusted mortality rates assumed to reflect the mortality experience of the wealthy [13]. While we believe our adjustment to be a reasonable one, it may still include biases which would affect the validity of our personal wealth estimates. The size of the multiplier used will, of course, affect the overall estimates of the number and wealth of the top wealthholders. However, estimates of the patterns of asset holdings among different age, sex, and marital groups of the wealthy will remain proportionately the same, regardless of the multiplier.

In an ongoing effort to improve the accuracy of the adjusted mortality rates, we are continuing to study the relationship between wealth and mortality. We have proposed a study which would use a file of estate tax returns to establish a frame of wealthy decedents. Extracting information on cause of death and occupation reported on the death certificates for these decedents, we will generate cause-specific mortality differentials for the wealthy [15]. These differentials will be a valuable tool in improving the estate multiplier technique.

CONCLUSION

Estate tax returns are a valuable source of economic and demographic information about the wealthiest segment of the population. The estate multiplier technique has proven to be fairly successful at using tax return information to estimate the wealth of these individuals. In order to improve the estate multiplier estimates, we continue to study the assumptions underlying the application of the multiplier and to measure the range of possible error in our results. Through further study and methodological adjustments to the technique, we hope to make our statistics more meaningful and useful. Eventually, we hope to use the estate multiplier technique in conjunction with other estimating methods to chart the wealth distribution of the entire population.

ACKNOWLEDGMENTS

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