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Wealth and Its Distribution, 1983-1992: Secular Growth, Cyclical Stability

John C. Weicher

This article describes the changes in the distribution of wealth among U.S. households that occurred between 1983 and 1992, a period that very nearly coincides with the most recent business cycle. The article extends a previous one, which discussed changes between 1983 and 1989, the expansionary phase of the cycle (Weicher, 1995). The distribution of wealth has received extended popular attention recently, based on reports that it became markedly more unequal during the economic expansion of the 1980s.[1] My previous article showed that this conclusion depends on technical issues about which statisticians and analysts disagree, and that the apparent changes in the distribution of wealth do not pass conventional tests of statistical significance in most cases. With the availability of new data for 1992, it is now possible to compare the experience during the expansion with the changes during the subsequent recession and, for the first time, to analyze changes over a business cycle with a consistent data series.

The additional data indicate that concerns over the purportedly increasing concentration of wealth were unnecessary. Even if the distribution did indeed become more unequal during the expansionary phase of the cycle, that change was fully reversed during the subsequent recessionary period. The distribution was about the same in 1992 as it was in 1983—or for that matter as it was in 1962. The degree of concentration has fluctuated since the end of World War II, and the measures for the latest cycle generally fall within the postwar range, although the data come from a variety of sources of varying quality and are available only at irregular intervals of a few years.

While the distribution was stable, total wealth and wealth per household increased over the cycle, so that it is appropriate to conclude that rich and poor households enjoyed a more or less equal gain, in percentage terms.

These findings are likely to be surprising. The notion that the distribution of wealth has become more concentrated has seemed plausible to many economists and many laymen. They note the rapid rise in the stock market and the fact that stocks are mainly held by well-to-do individuals, and they also note that income inequality has been steadily increasing. This article investigates these hypotheses and finds that they are incomplete. By itself, the rise in the stock market would have contributed to an increase in inequality, but it was offset by increases in the value of other assets that are widely held by middle-income households, especially equity in owner-occupied homes. Income and wealth are indeed correlated, but the correlation weakened between 1983 and 1992, and high-income households had less wealth for any given income level in the later year.

In this article I suggest the hypothesis that the distribution of wealth has a cyclical pattern. The article, of course, provides evidence on only one business cycle, and the limited evidence for earlier periods partly supports and partly is inconsistent with this hypothesis.

THE SURVEY OF CONSUMER FINANCES

The data source is the Federal Reserve Board's Survey of Consumer Finances (SCF). This is one of the few sources of information on household wealth that reports asset and liability holdings of indi-

[1] The source of this perception is Wolff (1995), which is a summary of his research on the distribution of wealth, written for a popular audience; this book was the subject of a front-page article in the *New York Times* (Bradsher, 1995).

vidual households for a sample of the entire population on a consistent basis over time. The most recent available surveys that are useful for analysis of the distribution of wealth are those for 1983, 1989, and 1992. These dates approximate to the turning points of the business cycle. The trough is dated as November 1982; the 1983 SCF was conducted between February and August 1983, and half the interviews had been conducted by April. The peak occurred in July 1990; the 1989 SCF was conducted between August 1989 and March 1990. The next trough occurred in March 1991; the 1992 SCF was conducted between June and November 1992. Thus the 1983 and 1989 surveys cover a period slightly shorter than the economic expansion, by about six months at either end, while the 1989 and 1992 surveys cover the last few months of the expansion, the succeeding recession, and the first 18 months of the next expansion.

An important feature of the SCF is that it includes a special sample of high-income households that can be expected to have unusually large wealth holdings, as well as a cross-section chosen randomly to represent the entire population of households. Because wealth is concentrated among a relatively few households, a national sample of households will give little information about a large fraction of household wealth. The high-income sample has grown in importance from one survey to the next, reflecting an effort to give more equal sampling probabilities to all dollars of wealth, rather than all households.[2]

MEASURING WEALTH

Wealth is defined as the value of assets minus the value of liabilities. The SCF contains detailed (though not exhaustive) information on both assets and liabilities, most of which is used in this analysis. Table 1 reports the components of wealth, as defined in this study.

The most important omission is the present value of private pensions and Social Security benefits that each household will receive in the future. Even

though these assets cannot be converted to cash, they are a substantial part of the portfolio of many households. As noted previously, the SCF provides calculations of the present value of pensions and Social Security for 1983 only.[3] For the later years, there is information on coverage for individual households, but not value. The 1983 data are reported in this article but omitted from the analysis of changes over time.

The second most important omission is the value of most consumer durables. Automobiles and other vehicles are included; otherwise the debt is reported but not the value of the asset. Durables can be taken into account either by estimating their value (as in Wolff, 1987), or by the simpler procedure of excluding the debt incurred to buy them as well as their value, on the ground that the total value of all consumer durables is likely to be at least as large as the remaining debt on them, for most households. This paper tests the effect of the latter procedure.

Both omissions distort the distribution of wealth, causing it to appear more unequal, as I will show later in the paper. It seems less likely that either omission, however, affects the changes in the distribution over time.

The miscellaneous assets category is very heterogeneous. It includes 23 categories in 1983, 30 in 1989, and 32 in 1992: many types of collectibles such as coins, stamps, Oriental rugs, and *objets d'art*; oil and gas leases; various debts owed to the household; and much more.

The concept in Table 1 will be referred to as "net worth" or "wealth" without further qualification in this article. The same concept has been used by Federal Reserve Board analysts for 1989 and 1992; for 1983 they exclude all miscellaneous assets except debts owed to the household and oil and gas leases.[4] Wolff's preferred concept excludes miscellaneous assets and the value of automobiles but includes automobile loans; he also reports other concepts, both broader and narrower (Wolff, 1987, 1994).

[2] For more extensive descriptions of these surveys, see Avery and others (1984a), Avery and Elliehausen (1986), Avery, Elliehausen and Kennickell (1988), Kennickell and Shack-Marquez (1992), Kennickell and Woodburn (1992), Kennickell and Starr-McCluer (1994), and Weicher (1995).

[3] Kennickell and Sundén (1997) have calculated pension and Social Security wealth for 1992. Although they do not report the same measures of inequality used in this paper, it is clear that the distribution of total wealth becomes more equal.

[4] See Avery, Elliehausen and Kennickell (1988); Kennickell and Shack-Marquez (1992); and Kennickell and Starr-McCluer (1994). Avery and Elliehausen (1990) warn in the codebook for 1983 that "some estimates [for miscellaneous assets] look to be very dubious."

WEIGHTING

In a survey design that combines a random sample of all U.S. households and a separate sample of the top few percent of the income distribution, it becomes important to weight the individual observations appropriately so that the sample households adequately represent the universe of all households. Analysts at both the Survey Research Center and the Federal Reserve Board have devoted substantial attention to the issue of weighting. Multiple weights have been published for the 1983 and 1989 surveys, and additional weights for 1989 and 1992 have been constructed and used in papers published by Board analysts, though they have not been included in the public use data tapes.[5] In this paper, two sets of weights are used for both 1983 and 1989, and one for 1992.

The choice of weights can affect the results, as will be seen later in this article. This is particularly true for 1983. For that year, alternative weights were constructed by analysts at the Board and at the Survey Research Center. These are known as FRB and SRC weights, respectively. They differ in the characteristics used to align the cross-section sample to the total population of U.S. households. The FRB weights align on the basis of totals for the four U.S. Census regions, and the SRC weights align on the basis of total households and the division between urban and rural locations. A second set of FRB weights was constructed when 1982 individual income tax data suggested that the high-income sample may have been given too much weight. These are known as the "FRB extended-income" weights. In this article, the FRB extended-income weight and the latest SRC weight (the revised SRC composite weight) are used for 1983. (These are variables B3016 and B3019, respectively, on the data tape.) Kennickell and Shack-Marquez (1992) use the FRB extended-income weight.

For 1989, two SRC sets of weights are available: a preliminary weight used by Kennickell and Shack-Marquez (1992) for comparing 1983 to 1989, and a revised

weight used by Kennickell and Starr-McCluer (1994) for comparing 1989 to 1992 (variables X40125 and X40131). The difference between them is much less important.

HOUSEHOLD WEALTH

Table 2 reports the total wealth of all U.S. households for each year, mean household wealth, and mean holdings of each of the major components of wealth. Both sets of weights for 1983 and 1989 are used, along with the one publicly available set for 1992.

On any comparison, total wealth increased during the expansion (between 1983 and 1989), declined insignificantly during the recession (between 1989 and 1992), and increased over the full business cycle. Mean wealth increased during the expansion, declined during the recession, and increased over the full cycle. The magnitude of these changes varies

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Table 1

Definition of Wealth (Net Worth)

Assets	Liabilities
Value of home	Mortgages/home equity loans
Value of cars	Auto loans
	Consumer debt
	Other debt
Investment real estate*	Mortgages on property
Unincorporated business**	Debts of business
Stocks	
Bonds	
Mutual funds	
Trusts	
Checking accounts	
Savings accounts	
Money market funds	
IRAs/Keoghs	
Life insurance (cash value)	
Thrift-type pensions (current value)	
Miscellaneous assets	

NOTE: Liabilities against specific assets are shown on the same line.

* Includes rental housing, office buildings, and other commercial property.
** Includes professional partnerships and closely-held corporations.

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[5] For a discussion of the 1983 and 1989 weights, see Weicher (1995); more extensive discussions appear in Avery and Elliehausen (1990, pp. 16–24) for 1983 and Kennickell and Woodburn (1992) for 1989.

Table 2

Household Wealth, 1983-1992

	1983 FRB (B3016)	1983 SRC (B3019)	1989 SRC (X40131)	1989 SRC (X40125)	1992
Total Wealth (In trillions of 1992 dollars)	14.3	15.2	19.5	19.0	18.9
Mean Household Wealth (In thousands of 1992 dollars)	170.9	181.8	209.3	204.7	190.1
Mean Holdings of Components:					
Automobiles	4.6	4.7	6.2	6.2	6.5
Home equity	48.2	47.7	55.5	57.1	48.6
Unincorporated business	31.0	37.8	45.1	41.7	40.1
Investment real estate	24.9	28.0	27.2	27.3	25.8
Farms	7.4	7.1	5.8	5.8	3.4
Stocks	17.5	17.9	13.8	12.9	16.3
Bonds	13.1	12.2	15.9	14.8	12.0
Trusts	5.2	7.3	4.8	4.3	3.7
Checking/savings/MMAs	9.9	10.0	14.4	14.0	11.9
Retirement accounts/life insurance	10.1	10.6	15.9	16.1	19.7
All other assets	2.7	2.8	8.9	8.5	5.1
Consumer debt	2.6	2.6	2.2	2.1	0.9
Other debt	1.1	1.7	2.0	1.9	2.0
Present Value of Private Pensions and Social Security (In thousands of 1992 dollars)	80.8	80.7	NA	NA	NA
Income (In thousands of 1992 dollars)	37.9	39.6	43.9	40.5	38.9

NA - Not available in 1989 or 1992 Survey of Consumer Finances

NOTE: 1983 and 1989 values adjusted to 1992 using the CPI-U annual average for the calendar years (1983 values multiplied by 1.4096; 1989 values multiplied by 1.1323).

SOURCE: Survey of Consumer Finances (1983, 1989, and 1992)

markedly, depending on the weights chosen, particularly for 1983. Total wealth in that year varies by almost $1 trillion, and mean wealth by about $11,000. The choice of weights is less important in 1989, but total wealth still varies by $500 billion, and mean wealth by about $4,500.

These differences give rise to substantial variation in the measured change between surveys. For mean household wealth, for example, the 1983 to 1989 increase ranges from $23,000 to $38,000;

the 1989 to 1992 decrease ranges from $15,000 to $19,000; and the increase over the cycle ranges from $8,000 to $19,000. In percentage terms, mean household net worth increased by 5 percent to 11 percent over the cycle; total wealth increased by 24 percent to 32 percent.

The limited data on wealth make it difficult to put these changes in any long-term context. The percentage changes in mean wealth are both larger than the change in mean household income as reported in the

SCF (an increase of less than 3 percent by one set of 1983 weights, and a decline of about 2 percent by the other).

The means for individual asset categories in Table 2 are calculated for all households, whether or not a particular household owns a particular asset. The most widely held assets are automobiles (between 83 and 86 percent of all households in various years), checking accounts (75 to 79 percent), and owner-occupied housing (63 to 65 percent). On the liability side, credit card debt was the most common form of debt in each year (37 to 41 percent) but home mortgages were almost equally frequent (37 to 39 percent) and vehicle loans were also common (29 to 35 percent). Home mortgage debt accounted for over half of all family debt in each year. (The home equity values in Table 2 are net of mortgage debt, as are the values for other asset categories where there is a specific debt against the asset.)

Stocks and other financial assets seem to come first to mind in discussions of "wealth," but other assets are at least as important. Owner-occupied housing is consistently about 30 percent of net worth. Unincorporated business and investment real estate together account for between 35 and 40 percent. These might be termed "entrepreneurial assets"; their owners must actively manage them or hire someone to do so. Financial assets as a whole account for about 30 percent. Stocks declined in importance from 10 percent of total wealth in 1983 to 6 percent in 1989, then rose again to 10 percent in 1992.

Table 2 also reports the present values of future pensions and Social Security benefits in 1983. They are larger than the value of any other category of assets, and larger than all other financial assets combined. If included in net worth, they would add close to 50 percent to mean household wealth in 1983.

The last line of the table shows mean household income, which is a pre-tax figure reported by the respondent. The SCF asks about total income. It also asks about income from various sources. When one adds the income from various sources, as

reported by the respondents, the resulting sum in many cases differs from the total income reported by these same families.

MEASURING THE DISTRIBUTION OF WEALTH

Two types of measures of the distribution of wealth are commonly used in economics: measures describing the entire distribution, and measures describing the concentration at one end of it. The latter are more common, for several reasons. The ownership of wealth is highly skewed, compared to income or other measures of economic well-being, so the share held by the richest one percent or 10 percent of all households attracts attention. Such concentration ratios are intuitively easy to interpret. They have also been popular because the only extended time-series measure of wealth is a concentration ratio. This is the estate multiplier, which applies mortality table ratios to information obtained from estate tax returns to estimate the concentration of wealth among current households.[6]

The main limitation of concentration ratios is that they describe only part of the distribution of wealth. Changes in net worth for the wealthy may not correspond to changes for the middle class or the poor; conversely, changes may occur for the middle class and the poor without any corresponding changes among the rich.

Since the SCF provides information about all households, not only about the wealthy, it can be used to measure broadly the overall distribution of wealth. The most common quantitative measure of the entire distribution is the Gini coefficient. It is used routinely to measure the distribution of income; the Census Bureau reports a Gini coefficient for the distributions of household income and family income each year.

The Gini coefficient has a range of 0 to 1. If the distribution of wealth is perfectly equal, the coefficient is zero; if all the wealth in the society is owned by one single household, the coefficient is unity. The greater the concentration of wealth, the closer

Table 3

The Concentration of Wealth
(Alternative weights)

Share Held By: (percent)	1983FRB (B3016)	1983SRC (B3019)	1989SRC (X40131)	1989SRC (X40125)	1992
Richest 1 percent	31.5	35.8	36.5	35.3	32.6
Standard error	(1.7)	(2.1)	(1.6)	(1.4)	(1.2)
Next 9 percent	35.1	33.4	32.5	32.2	35.8
All others	33.5	30.9	31.0	32.4	31.5
Share by Quintile: (percent)					
Highest	79.4	81.1	81.6	80.4	80.9
Fourth	13.1	12.1	12.5	13.1	12.5
Middle	5.9	5.4	5.0	5.5	5.2
Second	1.6	1.5	1.1	1.3	1.5
Lowest	– 0.0	– 0.0	– 0.2	– 0.3	– 0.0
Percentage of households with negative net worth	5.1	5.2	7.6	7.3	4.8

the Gini coefficient is to unity.[7] The advantage of the Gini coefficient is that it measures changes that occur in any part of the distribution. Its main drawback is that it has no intuitive interpretation. A Gini coefficient of 0.5 does not mean that the society is "halfway between" a perfectly equal and perfectly unequal distribution of wealth, and indeed it is not clear what such a statement means. Nor is it possible to explain the meaning of a Gini coefficient in terms of any other measure. All that can be said is that higher values of the coefficients imply greater inequality.

CHANGES IN THE CONCENTRATION OF WEALTH

Table 3 reports the concentration of wealth with particular attention to the share of the richest one percent of U.S. households (hereafter termed "the rich" for convenience).

The importance of weighting is clear from the table. The share of wealth owned by the rich is especially sensitive to the choice of weights in 1983. The resulting concentration ratios are very different, to the point that the pattern of concentration over the entire cycle is qualitatively different, depending on the 1983 weight.

The change in the share of the richest one percent of households tends to be balanced more by changes in the share of the next nine percent than by changes in the share of the remaining 90 percent. Stated alternatively, the share of the remaining 90 percent is apparently more stable over the cycle than the shares of the upper wealth groups. This pattern also depends to some extent on the choice of weights for comparisons over time.

It should be remembered that, while the shares change over time, total wealth is changing also. As total wealth for all households rose from 1983 to 1989, so did total wealth for each group, including those with declining shares. The same is true over the full cycle. Conversely, total wealth for all households declined from 1989 to 1992, and both the richest one percent and the remaining 90 percent incurred losses in total wealth as well as declines in share.

Table 3 also shows the share of wealth by quintile of the distribution. The pattern of changes by quintile depends very much on the choice of weights. For three quintiles, the 1992 share lies between the two calculated 1983 shares, and for two quintiles the 1992 share lies between the two calculated 1989 shares.[8]

The wealth share for the poorest quintile is negative because some households report negative net worth as shown in the last line of the table. Most of these households do not owe much, but they have still less in terms of assets. A large majority in each year (between 68 and 82 percent) have a negative net worth of less than $5,000. It can therefore be inferred that many households have a very small positive net worth. The upper bound for the poorest quintile is $3,800 in 1983, $2,600 in 1989, and $4,400 in 1992.

In evaluating these changes, it is important to remember that the data come from sample surveys and therefore have sampling errors. These sampling errors

[8] The 1992 share for the fourth quintile falls just below the lower of the two 1989 shares; the difference does not appear until the fourth digit.

are fairly large relative to the changes from one survey to the next. As shown in Table 3, the standard error for the share of wealth held by the rich is between 1.2 and 2.1 percent depending on survey year and weight. Standard errors are highest in 1983 and lowest in 1992. These standard errors are calculated by the bootstrap technique, with the shares being replicated 1,000 times for each survey and set of weights.[9]

The standard errors are large enough that many of the differences over time are not statistically significant. The significance of the differences is reported in Table 4. Whether there was a statistically significant increase in concentration between 1983 and 1989 depends on the choice of weights for 1983; whether there was a statistically significant decrease in concentration between 1989 and 1992 depends on the choice of weights for 1989 (though it should be noted that both are close to meeting the conventional significance test level). The only unambiguous finding is that there was no statistically significant change in the concentration of wealth over the full cycle from 1983 to 1992, although one comparison comes fairly close to indicating a significant decrease.

The concentration ratio varies markedly with the concept of wealth. As Table 5 (following page) shows, the narrower the concept, the greater the share of wealth held by the rich. Excluding automobiles from the basic concept consistently raises the concentration ratio by about one percentage point. Excluding owner-occupied housing (both house value and mortgage debt) raises the concentration ratio by about 10 or 11 percentage points.

An exception to this pattern occurs when unincorporated business and investment real estate are excluded, in effect limiting the concept of wealth to assets for which market values are readily available. The concentration ratios are reduced by 5 to 10 percentage points, with the larger reductions occurring in 1989 and 1992. The concentration does not change much

Table 4	
Statistical Significance of Changes in Concentration Ratios (Share of wealth held by richest 1 percent of households)	
	Proportion of bootstrap tests with positive differences (percent)
1989 vs. 1983	
X40125 vs. B3016	96.2*
X40131 vs. B3016	98.6*
X40125 vs. B3019	46.7
X40131 vs. B3019	60.7
1992 vs. 1989	
X42000 vs. X40125	7.5
X42000 vs. X40131	2.8*
1992 vs. 1983	
X42000 vs. B3016	72.3
X42000 vs. B3019	10.4

* Statistically significant at two-tail, 5 percent level.

NOTE: Proportions of 95 percent or more imply statistically significant increases; proportions of 5 percent or less imply statistically significant decreases.

from 1983 to 1989, and it declines from 1989 to 1992.

CHANGES IN THE DISTRIBUTION OF WEALTH

Changes as measured by Gini coefficients show a similar pattern to changes as measured by concentration ratios.

As Table 6 (following page) shows, the direction of the change in the distribution of wealth, over the full cycle and over the economic expansion of 1983-1989, again depends on the choice of weights. The change over the cycle varies from −.008 to +.009, while the change from 1983 to 1989 varies from −.002 to +.027. The distribution became somewhat more equal from 1989 to 1992, when either set of 1989 weights was used.

The standard errors of these Gini coefficients, shown in italics in Table 6, are large enough to cast doubt on

[9] The analysis of statistical significance and the bootstrap replications are based on a program developed by Paul W. Wilson. For an alternative procedure using the jackknife technique, see Yitzhaki (1991), who provided a FORTRAN program that served as a starting point for the analysis. See also Lerman and Yitzhaki (1989).

Table 5

Concentration Ratios for Alternative Concepts of Wealth
(share held by richest 1 percent of households, in percent)

	1983FRB (B3016)	1983SRC (B3019)	1989SRC (X40131)	1989SRC (X40125)	1992
Net Worth:					
Basic concept	31.5	35.8	36.5	35.3	32.6
Excluding automobiles	32.4	36.9	37.8	36.7	33.9
Excluding autos and owner-occupied homes	42.2	47.2	48.9	48.0	42.9
Excluding consumer debt	31.3	35.9	36.0	34.9	32.4
Excluding unincorporated business and investment real estate	26.7	28.5	27.0	25.3	22.6
Basic concept plus present value of private pensions and Social Security	22.3	26.0	NA	NA	NA
Basic concept plus present value of private pensions only	27.7	31.7	NA	NA	NA
Basic concept plus present value of Social Security benefits only	24.8	28.4	NA	NA	NA
Income:	10.8	13.9	17.9	14.5	11.9

Table 6

Gini Coefficients
(alternative weights)

	1983FRB (B3016)	1983SRC (B3019)	1989SRC (X40131)	1989SRC (X40125)	1992
Net Worth:					
Basic concept	.778	.795	.805	.793	.787
Standard error	*.008*	*.009*	*.008*	*.008*	*.006*
Excluding automobiles	.798	.814	.826	.815	.810
Excluding autos and owner-occupied homes	.900	.911	.921	.917	.898
Excluding consumer debt	.771	.788	.795	.783	.780
Excluding unincorporated business and investment real estate	.730	.741	.757	.743	.734
Basic concept plus present value of private pensions and Social Security	.690	.708	NA	NA	NA
Basic concept plus present value of private pensions only	.745	.764	NA	NA	NA
Basic concept plus present value of Social Security benefits only	.708	.726	NA	NA	NA
Income:	.465	.491	.540	.505	.501

COMPARISONS TO OTHER STUDIES

The table below compares the results in this paper with the reported findings of other analysts, using the same definitions of net worth and weights as they use, as much as possible. The results are generally similar, but never identical. Precise comparisons with the Federal Reserve Board analysts in 1989 and 1992 are not possible because the data on the public use tape have been altered slightly for disclosure protection and they use the original data; nonetheless, my results are consistently closer to theirs than to those reported by Wolff. My results also show less inequality than Wolff's and more inequality than reported by the Federal Reserve Board analysts. All show the same pattern over time: All have an increase in inequality during the cyclical expansion, and both the Federal Reserve Board analysts and I show a decrease during the recessionary period. Wolff has not published an analysis for 1992.

The two sets of results reported for "Weicher" differ because they are developed to match the results reported by Wolff and the Federal Reserve Board analysts, who use different weights and definitions of wealth. In both years, Wolff excludes automobiles, and the Federal Reserve Board analysts include them. Wolff includes miscellaneous assets in 1983 but excludes them in 1989, while the Federal Reserve Board analysts include a few miscellaneous assets in 1983 (debts owed to households and oil and gas leases) and include all miscellaneous assets in the other years. The weights differ in 1989; Wolff uses the average of x40125 and x40131, while the Federal Reserve analysts use x40131.

Comparison of Results

	Concentration Ratios (percent)			Gini Coefficients		
	1983	1989	1992	1983	1989	1992
Wolff	35.7	37.7	NA	.806	.84*	NA
Weicher	32.5	37.0	NA	.778	.82	NA
Federal Reserve Board	31.3	36.2**	30.4**	.777	.793**	.782**
Weicher	31.6	36.5	32.6	.780	.805	.787

  * Only reported to two decimal places.

** Comparisons based on Federal Reserve Board design-based weights for 1989 and 1992.

N.A.: Not available for Wolff and therefore not comparable.

SOURCES: Wolff, 1983: Edward N. Wolff and Marcia Marley, "Long-Term Trends in U.S. Wealth Inequality: Methodological Issues and Results," The Measurement of Saving, Investment, and Wealth, Robert E. Lipsey and Helen Stone Tice, eds., University of Chicago Press, 1989, pp. 765-844, Table 15.15;
Wolff, 1989: Edward N. Wolff, "Trends in Household Wealth in the United States, 1962-83 and 1983-89," Review of Income and Wealth (June 1994), pp. 143-174;
Federal Reserve Board, 1983 and 1989: Arthur B. Kennickell and R. Louise Woodburn, "Estimation of Household Net Worth Using Model-Based and Design-Based Weights: Evidence from the 1989 Survey of Consumer Finances," unpublished paper, Board of Governors of the Federal Reserve System, April 1992;
Federal Reserve Board, 1992: Arthur B. Kennickell, Douglas A. McManus, and R. Louise Woodburn, "Weighting Design for the 1992 Survey of Consumer Finances," unpublished paper, Board of Governors of the Federal Reserve System, March 1996.

Table 7

Statistical Significance of Changes in Gini Coefficients
(Basic wealth concept)

	Proportion of bootstrap tests with positive differences (percent)
1989 vs. 1983	
X40125 vs. B3016	92.0
X40131 vs. B3016	99.2*
X40125 vs. B3019	47.9
X40131 vs. B3019	79.5
1992 vs. 1989	
X42000 vs. X40125	43.2
X42000 vs. X40131	11.0
1992 vs. 1983	
X42000 vs. B3016	92.4
X42000 vs. B3019	40.9

* Statistically significant at two-tail, 5 percent level.

NOTE: Proportions of 95 percent or more imply statistically significant increases; proportions of 5 percent or less imply statistically significant decreases.

whether there was any increase or decrease in inequality over any of these periods. Significance tests for the differences in the Gini coefficients are shown in Table 7. Only one of the four comparisons between 1983 and 1989 shows a statistically significant increase, though a second very nearly meets the conventional criterion. Neither of the comparisons for the recessionary period shows a significant decrease. Nor is either of the comparisons over the full cycle significant, although one comes close to indicating a significant increase. Whether the magnitude of any of the differences is politically or socially important is a matter for individual judgment.[10]

Changing the definition of wealth has the same effect on the Gini coefficient as it has on the concentration ratio. The narrower the definition of wealth, the more unequal is its distribution, in any year. Merely excluding automobiles from house-

hold net worth raises the Gini coefficient by about 0.02; excluding home equity raises it by about 0.10. Excluding unincorporated business and investment real estate lowers the Gini coefficients consistently by about 0.05. These assets are widely held, as previously noted, and they are a large share of the wealth of relatively low-wealth households. For the narrower concepts of wealth, the pattern of changes over time, and the significance of such changes, are similar to the pattern for the basic concept.

Including pensions and Social Security benefits in 1983 lowers the Gini coefficient by about 0.10. Including either by itself also lowers the coefficient. Social Security has a greater effect than private pensions, for either set of weights.

Excluding consumer debt does not have much effect on the analysis. Gini coefficients are consistently lower when consumer debt is excluded, by 0.01 or less, and all but one of the concentration ratios are also lower, by 0.5 percent or less. Since consumer debt is more important for lower-wealth households, these results are not surprising. Also, including or excluding miscellaneous assets on a consistent basis does not change the results. Gini coefficients vary by no more than 0.002, and concentration ratios vary by no more than 0.3 percent. (These results are not shown in the tables.)

Clearly the findings are sensitive to the choice of weights. Indeed, the choice for 1983 is so important that it determines the qualitative conclusions of the analysis. By the weights developed at the Federal Reserve Board, total wealth increased measurably over the cycle, while the distribution of wealth showed no net change, becoming more unequal during the expansion and more equal again during the recession; this pattern implies that the wealth of the rich and the poor increased proportionately. By the weights developed at the Survey Research Center, total wealth did not increase much, but the distribution of wealth became marginally more equal over the cycle.

The reason for these conflicting conclusions is that the measured changes in

[10] Wolff (1994) refers to an increase of .04 in the Gini coefficient between 1983 and 1989 as "sharp," and a difference of .02 between Gini coefficients for two different measures of wealth in 1989 as "not great." He does not report Gini coefficients to more than two places.

Table 8

Index Changes in Asset Values
(Based on annual averages except as noted)

Asset Category	Index	Percent Change		
		1983-1989	1989-1992	1983-1992
Stocks	Standard & Poor 500	101	29	159
Taxable bonds*	Dow-Jones 20-Bond Index	21	10	34
Tax-exempt bonds	Standard & Poor's Municipal	29	11	43
Owner-occupied houses	Census One-Family Home Index	24	4	30
Investment real estate**	Frank Russell Property Index	5	−26	−22
Unincorporated business***	Russell 2000	50	31	97
Unincorporated business	Nasdaq OTC Composite Index	63	49	143
Farms	USDA average value/acre	−16	3	−13
Price Level	Consumer Price Index	24	13	41

  * Yearly highs.

  ** Compiled from quarterly averages; index for commercial real estate.

*** Last trading day in December.

SOURCES: *Statistical Abstract of the United States: 1992*; U.S. Bureau of the Census, *Price Index of New One-Family Homes Sold*; Frank Russell Company; U.S. Department of Agriculture.

inequality and concentration are small. For most of the topics considered later in this article, the choice of weights does not matter, but it does matter for the analysis of the changing distribution of wealth.

Unfortunately, since the choice of weights in 1983 matters so much, there is apparently no strong reason for preferring one set to the other. The FRB weights were constructed with a more extensive system of controls for location and demographic attributes of households. The major differences occur for households in the high-income sample, which of course is especially important for the purposes of this paper.[11]

In the remainder of this article, comparisons are based on the weights for 1983 and 1989 used by Kennickell and Shack-Marquez (1992), variables B3016 and X40125, respectively. The 1983 weights are chosen primarily because they have been more widely used in recent research; the 1989 weights, for convenient comparison with my previous paper. The results are systematically checked by using the alternative weights, and important differences are noted.

WHY *DIDN'T* INEQUALITY INCREASE?

The conclusion that the distribution of wealth did not change significantly over the 1983-1992 period runs counter to the expectations of many economists and laymen alike. There are two reasons for this "conventional wisdom":

(1) There was a major stock market boom—the Standard and Poor's 500 Index doubled during the expansion and rose by a further 30 percent during the recession, for example—and stocks are generally held by people who are well off to begin with.[12]

(2) The distribution of *income* became more unequal, continuing a long-term trend that dates back to 1967.

This section of the paper considers each of these hypotheses.[13]

[11] Based on conversation with Robert Avery, who stresses that the construction and choice of weights are the biggest issues in the SCF, and that results are sensitive to the choice of weights.

[12] Wolff (1994) suggests that the stock market boom may have contributed substantially to the increase in inequality that he measures between 1983 and 1989.

[13] A third hypothesis is that demographic changes, particularly the growth of households consisting of a single woman and her children, caused both the distribution of income and wealth to become more unequal. The SCF shows a decline in the incidence of these households over the period, while the larger Current Population Survey (CPS) of the Census Bureau shows an increase. Thus it is difficult to test this hypothesis. Analysis of demographic changes, including changes in the age distribution as well as household composition, shows that the demographic changes as measured in the SCF do not explain the changes in the distribution of wealth. It should also be mentioned that the SCF does not measure race and ethnicity consistently; in the 1983 survey, the enumerator judged the race on ethnicity of the respondent, while in the later surveys, the respondent was asked to identify his or her own race.

Table 9

Effect of Asset Value Changes on Gini Coefficients
(Unadjusted net worth including autos)

Asset	Change in Gini Coefficient		
	1983-1989	1989-1992	1983-1992
Stocks	.01348	.00132	.02055
Bonds	.00147	.00051	.00228
Owner-occupied homes	−.02528	.00036	−.02922
Investment real estate	.00101	−.00012	−.00203
Unincorporated business	.01311	.00994	.02422
Farms	−.00088	.00007	−.00072
All assets combined	−.00238	.00996	.00637
Net worth (from Table 6)	.01499	−.00616	.00883
Standard error (from Table 6)	*.008*	*.008*	*.006*

Changes in Asset Values

While stocks seem to be the first asset that comes to mind when "wealth" is mentioned, they are not the most important component of wealth in household portfolios. Other assets also experienced changes in value between 1983 and 1992. These changes may have contributed to the change in the distribution of household wealth. Table 8 reports the changes in value for several major asset categories (as measured by commonly used price indices for those assets) over the full cycle and for the expansion and the recession.[14] It is possible to measure the effect of these changes on the distribution of wealth by applying the indices to the 1983 holdings of each asset by each household. In behavioral terms, the household is assumed to hold the same portfolio from the beginning to the end of the cycle, neither buying nor selling any assets, nor moving.

For most assets, the index can be simply multiplied by the reported 1983 value. In the case of owner-occupied housing, the change in the price of the house is not the change in home equity, for two reasons. First, for owners with mortgages, home equity rises in percentage terms by more than the increase in home price. The mean ratio of outstanding mortgage principal balance to house value was 23 percent in the 1983 SCF, and the mean equity was therefore 77 percent of house value. The homeowner's equity is increased by the full amount of the increase in house value, so the mean home equity is raised by 39 percent (30/77) instead of 30 percent. Second, it is assumed that the owner continued to make mortgage payments during the nine years; otherwise the household would default on the mortgage and lose the house, and thus change its portfolio. In 1983 the mean remaining life was 15 years, 8 months for first mortgages and 7 years, 10 months for second mortgages. If owners continued to make mortgage payments for nine years between the two surveys, then on average they paid off a substantial share of the first mortgage and all of the second. The mean reduction in the outstanding principal balance was 53 percent, and the mean increase in home equity was 16 percent. This procedure is not used for home equity loans; the assumption is that the principal balance on the loan does not change. The combined net effect of price appreciation and mortgage amortization is to raise mean home equity by 55 percent.

The same procedure is followed for investment real estate, for the same reason.

In Table 9, the effect of these changes on the Gini coefficient is shown for several

[14] There is no index for unincorporated business per se, apart from the USDA series on average value per acre for farms. For other businesses, value change may be approximated by the Russell 2000 and Nasdaq small-stock indices, though probably not for professional practices or small retailers.

individual assets and for all assets combined, over the expansion, the recession, and the full cycle. Changes in asset values have different effects in different periods. The combined change in values for all assets is large enough to account for most of the small (and insignificant) change in inequality over the full cycle, but it clearly does not account for the change over either the expansion or the recession.[15] In each phase of the cycle, the direction of asset-price changes is directly opposite to the change in inequality: For the period of economic expansion, the aggregate effect of asset-price changes lowers the Gini coefficient very slightly, when inequality actually increased, and for the recession years, it raises the Gini coefficient by more than its standard error, when inequality actually decreased.

Among individual assets, the effect of the stock-prices change is consistent with the change in the Gini coefficient during both the full cycle and the expansion. In both periods, it is large enough to account for the full change in inequality. But there are changes of similar size for other assets, in particular for unincorporated businesses and owner-occupied housing. The changes go in both directions, and they largely cancel each other. The changes in stock prices and unincorporated businesses raise the Gini coefficient, but the change in home equity lowers it. Over the full cycle, the effect of the home equity change is approximately two-thirds as large as the effect of changes for the other two assets combined; over the expansion, it is about as large as the other two combined. Even though stock prices rose more than any other asset and stock holdings are concentrated among richer households, the rise in house prices increased the wealth of a broad range of middle-class households to an even greater extent, more than offsetting the effect of the stock market boom. As a result, asset-value changes do not affect inequality.

In addition, there was a diffusion in stock ownership over the cycle. Many people who were not rich increased their holdings. In 1983 the richest one percent of all households owned 58 percent of all

Table 10

Wealth and Income

Year	Intercept	Income	Income^2	R^2
1983	−167316	8.871	4.47e^{-7}	.362
1989	−33809	5.941	−4.93e^{-8}	.210
1992	−99083	7.446	−4.67e^{-8}	.212

stock. In 1989, they owned 46 percent; in 1992, 42 percent.[16] This diffusion also argues against an increase in inequality.

The recessionary period from 1989 to 1992 is more puzzling. Almost all of the indices continued to rise during this period. Asset-value changes alone should have led to an increase in inequality, rather than to the decrease that actually occurred.

Taken together, these results suggest that asset-value changes as a whole had little effect on the distribution of wealth, even though the effects of changes for some individual asset categories were large.

To test for the consistency of these results, I also calculated the Gini coefficients using the alternative weights for 1983 and 1989 (variables B3019 and X40131, respectively). The results were basically the same. As a further check, I used 1992 as the base year for asset holdings and deflated the values back to 1983; the same procedure was followed for the expansion and recession periods within the cycle. The results were consistent with those shown in Table 9, except that the change in value for owner-occupied housing had a much larger effect, in the direction of reducing inequality.

Income and Wealth

The distribution of income among U.S. households became more unequal between 1983 and 1992; the Gini coefficient increased from .414 in 1983 to .431 in 1989 and .433 in 1992 (U.S. Census Bureau, 1993). For the households in the SCF, the pattern, however, is different, as shown in Table 6: the Gini coefficient is higher for 1992 than for 1983, but it falls

[15] Using a preliminary version of the 1992 SCF, Poterba and Samwick (1995) conducted a similar exercise in terms of concentration ratios over the full cycle and found that the share of wealth held by the richest one percent of U.S. households would have risen from 31 to 33 percent, holding 1983 portfolios constant and indexing them for changes in asset prices. They did not examine the subperiods. The direction of change is consistent with the calculated change in the Gini coefficient shown in Table 9 for all assets combined. It seems likely that it is not statistically significant.

[16] Poterba and Samwick (1995) also find a decline in stock ownership among the rich from 1983 to 1992.

somewhat during the recession period. The decline from 1989 to 1992 may be consistent with the corresponding decline in the Gini coefficients for wealth, but the increase in income inequality over the whole cycle is not consistent with the stability of the wealth distribution.

Wealth is certainly positively correlated with income, but the relationship between income and wealth was not as close at the end of the cycle as it was at the beginning. Table 10 reports a basic statistical analysis of the relationship between income and wealth, in which wealth is regressed against income and the square of income. This is not intended to represent any causal relationship between the two, but rather to show how it is possible that, even though the distribution of income became more unequal, the distribution of wealth did not.

Two results in Table 10 are relevant: both the regression coefficient for income and the coefficient of determination (R^2) were larger in 1983 than in either of the later years. For any given high-income level, households in 1983 had, on average, more wealth than they did in 1989 or 1992. Also, there was more dispersion of wealth among households at any given income level in 1983; income was a better predictor of wealth.

There is undoubtedly a stronger relationship between wealth and income than between wealth and most other characteristics of households, and this is true in each year. But the relationship weakened in two senses over the period studied. The distributions of wealth and income thus behaved somewhat differently over the 1983-1992 cycle.

TRENDS AND CYCLES IN THE DISTRIBUTION OF WEALTH

It is very difficult to put these results in historical context. There is only one similar survey: the 1962 Survey of Financial Characteristics of Consumers (SFCC), also conducted by the Federal Reserve Board.[17] The SFCC reports a concentra-

tion ratio of 30 percent, similar to the ratios in 1983 and 1992. Thus a comparison based on these few data points, which are clearly the best available data, indicates that there has been no net change in the distribution of wealth over three decades.

There are a few surveys for various years since 1962, plus two synthetic data bases, that are less useful than the Federal Reserve surveys; they typically lack a high-income sample and do not include as many asset categories, and in each case the data are available for only a single year. The synthetic data bases merge IRS records with Census data for households with similar demographic characteristics.[18]

The only consistent time series on the concentration of wealth comes from estate tax multipliers, calculated at irregular intervals from 1922 through 1976. For the postwar period, they show no clear trend. Smith (1984) finds that the share held by the richest 1 percent of individuals (not households) fluctuated between 26 and 31 percent between 1958 and 1972. For 1962, it was 28 percent, slightly below the figure from the SFCC.[19] Wolff (1995) combines Smith's work with an earlier series created by Lampman (1962) and several more recent surveys and estimates the concentration ratios for households; his series shows that the ratio has fluctuated between about 30 and 35 percent since 1945, with one noteworthy exception. During the later 1970s the concentration ratio fell sharply to around 20 percent, then rose again by 1983. If these changes are taken at face value, the most likely cause is the unprecedented peace-time inflation experienced during the 1970s, when the price level tripled, nominal stock market valuations did not change, and households bought homes as a hedge against inflation as soon as they possibly could.

It is not possible to infer much about cyclical patterns in the distribution of wealth. The years for which estate multipliers are available generally do not coincide with cyclical turning points. The only reasonable basis for comparison is

[17] The SFCC combines high-income and cross-section samples, in a similar fashion to that of the SCF, but it has less detail on some asset categories. It is described in Projector and Weiss (1966).

[18] See Wolff and Marley (1989) for a discussion of these studies.

[19] Wolff (1995) calculates a much larger difference: 28 percent from the SFCC vs. 21 percent from the estate multiplier. He calculates the estate multiplier for households rather than for individuals, and he adjusts the survey data to match national estimates of total household wealth (see Appendix).

the long expansion from 1961 to 1969, and it does not support the hypothesis of a cyclical pattern. The concentration ratio showed an overall decline of approximately one percentage point between 1962 and 1969; it rose from 1962 to 1965 and then declined from 1965 to 1969. Since inflation began to accelerate around 1965, it is possible that the effect of inflation dominated the last stage of the expansion, but this is necessarily conjectural. Wolff's series shows a decline in concentration from 1965 to 1976 or 1979 (depending on the definition of wealth), but an increase from 1979 to 1981, before the disinflation of the 1980s could have had much effect. Wolff also shows a sharp increase in concentration from 1981 to 1983, the period that includes the severe 1981-1982 recession, which was not consistent with the cyclical pattern for 1989-1992.

Before taking any of these estimated changes too seriously, it is useful to remember that the data for 1976, 1979, 1981 and 1983 come from four different sources, and the differences in concentration ratios may reflect the differences in the data instead of differences in reality. The safest conclusion seems to be that we will not be able to provide much further evidence on cyclical patterns of wealth concentration until further surveys have been taken during future cycles.
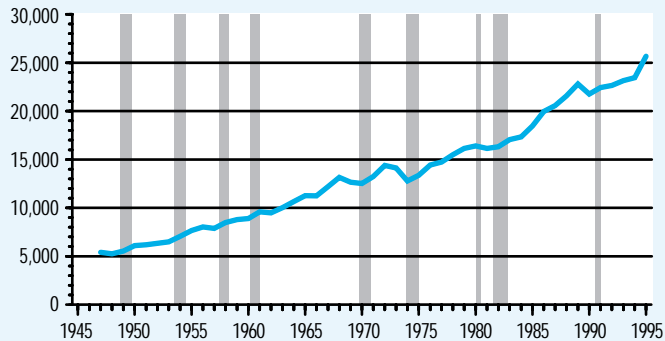
There is some evidence of cyclicality from an alternative data source, the Flow of Funds Accounts constructed by the Federal Reserve Board for the U.S. economy. Figure 1 shows the total net worth of the household sector from year to year over the postwar period. There are declines during most of the recessions, including the 1990–91 recession, though these declines do not always coincide exactly with the recessions.

Total household wealth in the SCF also declined from 1989 to 1992. The fact that total wealth declined in the latest recession as well as most earlier ones does not necessarily imply that the wealth of the rich declined in those earlier recessions even though it also declined in the latest one.

Figure 1

Household Total Net Worth

Trillions of 1992 dollars

SOURCE: Flow of Funds
Shaded years represent recessions.

But at least the aggregate change in the Flow of Funds household sector is consistent in the different recessions.

CONCLUSION

My previous *Review* article on this subject (Weicher, 1995) concluded by speculating that the increase in inequality may have been a cyclical phenomenon. The present analysis supports that hypothesis. To the extent that the distribution of wealth became more unequal during the long economic expansion from 1983 to 1989, it was reversed during the recessionary period from 1989 to 1992; over the full economic cycle, the distribution of wealth did not change. More precisely, the measured changes in inequality do not pass conventional tests of statistical significance, and the direction of change depends on which set of weights is used for 1983.

This finding is likely to be surprising; indeed, to the extent that similar results have been reported previously by Federal Reserve Board analysts, they have been received skeptically.[20] These doubts appear to be based on the continuing increase in income inequality and the stock market boom. However, the correlation between income and wealth has become attenuated during the cycle, and the effect of the stock market boom has

[20] See for example Stevenson (1996) and Malone (1996) for reactions to Kennickell, McManus and Woodburn (1996).

been offset by changes in the values of other assets, particularly the equity of homeowners, and perhaps by some diffusion of stock ownership.

These results raise a question about the long-term behavior of the distribution of economic well-being. Wealth appears to be no more concentrated in 1992 than it was in 1983 — or for that matter than it was in 1962. Yet, over most of the period since 1967, the distribution of income has steadily become more unequal. This difference has not attracted attention because there has been so little information on wealth, and because it appeared that the distribution of wealth became more unequal during the 1980s (though not over the longer interval between 1962 and 1983). But divergent trends, over a long period, now are evident.

Future data on wealth may reveal a still different pattern, but at present there is a paradox that deserves systematic investigation.

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ADJUSTING THE DATA

The national totals for the values of assets and liabilities as calculated from the Survey of Consumer Finances (SCF) do not necessarily match the totals from other data sources. This is true for any set of weights in any year. Analysts must therefore decide whether, and how, to reconcile the totals from different sources—whether to accept the values from the SCF or to use other data as the benchmark, and adjust the SCF to match that benchmark.

The most detailed source of data on total asset and liability values for households is the Flow of Funds Accounts (FOF), which, like the SCF, is compiled by the Federal Reserve Board. It is a well-established data set that has been widely used for many years and is generally regarded as reliable. At the same time, it is not designed to focus particularly on households. In many categories, the household sector is the residual. The values for household asset and liability holdings are the remainders after all the values for business and government sectors have been subtracted from the total. Residuals incorporate the net effects of any errors in any of the other sectors and therefore are likely to be less reliable than the estimates for those sectors. In addition, the Flow of Funds counts nonprofit organizations such as religious institutions, charitable organizations, and foundations as part of the household sector.

Analysts have reached different conclusions about the utility of reconciling the SCF and the FOF. Wolff (1987, 1994) has taken the FOF as the more accurate source for financial asset values and has adjusted many of the SCF figures for individual households by the ratio of the aggregate totals for the SCF and the FOF. Federal Reserve Board analysts have followed the opposite procedure. Avery and others (1984a, 1984b), Avery and Elliehausen (1986), Kennickell and Shack-Marquez (1992), and Kennickell and Starr-McCluer (1994) all have used the SCF without any adjustments. Avery, Elliehausen, and Kennickell (1988); Curtin, Juster, and Morgan (1989); and Smolensky (1989) have argued that the SCF is likely to be the better data source for 1983 in most instances. Detailed reconciliations of the SCF and FOF have been constructed by Avery, Elliehausen, and Kennickell (1988) for 1983, and by Antoniewicz (1996) for 1989 and 1992; they estimate the shares held by nonprofit institutions and take account of other differences in coverage, such as checking account float. They conclude that the estimates of total wealth are quite close for all three years. In addition, the totals in most categories are close, though there are some notable discrepancies. Time deposits are consistently lower in the SCF, and corporate equity is consistently higher. Some categories show major differences in only one of the three years: Bonds are lower in the SCF in 1983, equity in non-corporate business is higher in 1992, and non-mortgage debt is lower in 1992.

Wolff's studies do not make use of the Federal Reserve Board analysts' reconciliation for 1983, and they were published before the reconciliation for 1989 became available. He relies mainly on the published FOF data. Using that data set, he finds that larger discrepancies occur on the liability side in 1983 and 1989. The difference is large enough that adjusting individual household data leads to some rather odd results, especially for households that report large consumer debt. Adjusted wealth for these households is sometimes large and negative, while unadjusted wealth is large and positive. In 1983, for example, the five poorest households on an adjusted basis are all in the richest one percent on an unadjusted basis. When assets and liabilities are adjusted, 17 percent of all households in 1983 and 13 percent in 1989 reported negative net worth. When the data are not adjusted, only 5 percent of households in 1983 and 7-8 percent in 1989 reported negative net worth. Wolff (1994) suggests that the differences in liabilities between the SCF and FOF probably occur because of failure to

Table A1

Adjusting The SCF To Match The Flow Of Funds: Concentration Ratios

| | Unadjusted (percent) | Adjusted | |
		Assets and Liabilities (percent)	Assets Only (percent)
Federal Reserve Adjustments			
1983: 1980 controls (B3014)	34.9	33.6	33.3
1983: FRB weight (B3016)	31.5	30.2	30.0
1983: SRC weight (B3019)	35.8	34.4	34.1
1989: X40125	35.3	35.2	35.2
1989: X40131	36.5	36.3	36.3
1992	32.6	32.5	32.4
Wolff Adjustments			
1983: 1980 controls (B3014)	34.9	36.1	33.2
1983: FRB weight (B3016)	31.5	30.5	29.9
1983: SRC weight (B3019)	35.8	34.9	34.8
1989: X40125	35.3	37.3	36.4
1989: X40131	36.5	38.6	37.5

Table A2

Adjusting The SCF To Match The Flow Of Funds: Gini Coefficients

| | Unadjusted | Adjusted | |
		Assets and Liabilities	Assets Only
Federal Reserve Adjustments			
1983: 1980 controls (B3014)	.791	.790	.785
1983: FRB weight (B3016)	.778	.778	.773
1983: SRC weight (B3019)	.795	.794	.789
1989: X40125	.793	.792	.792
1989: X40131	.805	.804	.804
1992	.787	.789	.784
Wolff Adjustments			
1983: 1980 controls (B3014)	.791	.857	.783
1983: FRB weight (B3016)	.778	.793	.774
1983: SRC weight (B3019)	.795	.799	.791
1989: X40125	.793	.823	.801
1989: X40131	.805	.834	.813

report a debt, rather than because of understatement by households that do report it; in that case, proportional adjustment is likely to misrepresent the position of households that actually report relatively large debt holdings. In Wolff's analysis of the 1989 SCF, he therefore adjusts assets, but not liabilities, to be consistent with the FOF. The discrepancies on the liability side are larger in 1983 than in 1989, so the same argument would apply for that year as well. However, it should be remembered that Wolff's adjustments for debt are generally larger than the discrepancies as measured by the Federal Reserve Board analysts.

On balance, it seems best not to adjust the data, because the differences between the SCF and FOF are not large in the aggregate, and because adjusting liabilities affects the individual household data so greatly. The text of this article therefore uses unadjusted data for most of the analysis. However, I have also made calculations using the adjusted data, because Wolff's calculations, which are the most widely publicized, follow that procedure.

The effect of adjustment is shown in Table A1 for concentration ratios and A2 for Gini coefficients. Each table reports results based on each of the five weights from the text. In addition, weights for 1983 that are based on population controls from the 1980 Census are used, because these weights were the basis for the first studies of the 1983 SCF (e.g., Wolff, 1987; Avery and others, 1984a, 1984b). For each set of weights in each year, the data are adjusted in two ways: one using Wolff's methodology (1987, 1994), and one using the reconciliations by the Federal Reserve Board analysts. Three sets of results are shown: (1) unadjusted (repeated from Table 3 in the text for concentration ratios and Table 6 for Gini coefficients), (2) with both assets and liabilities adjusted; and (3) with only assets adjusted, because of the problem with liabilities (Wolff's procedure for 1989).

Measuring inequality in terms of concentration ratios, adjustment gives a slightly more pronounced cycle using the Federal Reserve Board analysts' calcula-

tions: The ratio is somewhat lower in 1983 and trivially lower in 1989 and 1992. The results are unaffected by whether debt is adjusted, in addition to assets. Using Wolff's calculations, adjustment lowers the concentration ratio in 1983 and raises it in 1989, so there appears to be more of an increase in inequality over the expansion phase of the cycle. Differences of 0 to 5 percentage points, unadjusted, become differences of 2 to 8 points, adjusted. Adjusting for assets only makes the increase marginally smaller.

For measuring inequality in terms of Gini coefficients, adjustment using the Federal Reserve Board analysts' calculations gives a slightly more pronounced cycle only if the adjustment is limited to assets. In that case, the Gini coefficient is .005 to .006 lower in 1983, .001 lower in 1989, and .003 lower in 1992. These differences are surely not significant. Adjusting for debt as well as assets is virtually identical to making no adjustments. Using Wolff's calculations, adjustment makes a larger difference. Adjusting for assets only, the 1983 coefficients decrease by .004 and the 1989 coefficients increase by .008; the unadjusted increase of .015, when weighted according to the preferred weights in the text, becomes an adjusted increase of .027. Adjusting for debt as well as assets has a still larger effect; the 1983 coefficients increase by approximately .015 and the 1989 coefficients by about .030. The unadjusted increase of .015 becomes an adjusted increase of .030.[1]

Special mention should be made of the 1983 results derived from the weights that are based on 1980 Census population controls. Using the Federal Reserve Board analysts' adjustments does not make much difference; the results fall in between those for the two sets of 1983-based weights. Using Wolff's adjustments, however, and adjusting for both assets and liabilities does make a difference; the Gini coefficients are much higher than for either of the 1983-based weights. This occurs because the debt adjustment ratios are much higher; each household's reported non-mortgage debt is multiplied by 3.4

[1] Wolff and Marley (1989, Table 15.10) report a comparison of the SCF and FOF for 1983 that differs from the comparison in Wolff (1987); the FOF data differ slightly in several categories and substantially for financial securities, and the SCF data are apparently weighted by variable B3016. Adjustment based on the FOF data from this table results in Gini coefficients of .779 instead of .793 for B3016, and .795 instead of .799 for B3019. The effect of adjustment is therefore larger; the 1983-1989 increase for the preferred weights rises from .015 to .046.

rather than 1.2, and each household's reported mortgage debt is multiplied by 1.6 instead of less than 1.1. Reported debts are larger relative to reported assets for low-wealth households, so the adjustment process increases the measured disparities between rich and poor.[2]

Overall, adjustment in any consistent manner results in a more cyclical pattern of inequality, but the choice of adjustment matters. Using the adjustments developed by the Federal Reserve Board analysts produces results in which nearly all the changes are trivial and all are smaller than the standard errors of the unadjusted measures of inequality. Using Wolff's adjustments, on the other hand, produces a measured increase in inequality over the economic expansion that is larger—roughly double the unadjusted increase.

The limitations of the adjustment procedure, and in particular the assumption that each household understates or overstates its assets or liabilities in the same proportion, suggest that the unadjusted results are preferable to the adjusted results, regardless of which adjustment methods are used.

[2] This statement may appear to be a truism, but it is not. A poor household could report $1,000 in assets and zero dollars in liabilities, in which case adjustment would raise its net worth. Adjustment will lower the net worth of households that report $2,000 in assets (any assets except savings accounts) and $1,000 in liabilities (any liabilities).