Has Middle Class Wealth Recovered?

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Abstract. Asset prices plunged between 2007 and 2010 but then rebounded from 2010 to 2016. The most telling finding is that median wealth plummeted by 44 percent over years 2007 to 2010, almost double the drop in housing prices, and by 2010 was at its lowest level since 1969. The inequality of net worth, after almost two decades of little movement, went up sharply from 2007 to 2010. Relative indebtedness expanded from 2007 to 2010, particularly for the middle class, though the proximate causes were declining net worth and income rather than an increase in absolute indebtedness. The sharp fall in median net worth and the rise in overall wealth inequality from 2007 to 2010 are traceable to a large extent to the high leverage of middle class families and the high share of homes in their portfolio. Mean and median wealth rebounded from 2010 to 2016, by 17 and 28 percent, respectively. While mean wealth surpassed its previous peak in 2007, median wealth was still down by 34 percent. More than 100 percent of the recovery in both from 2010 to 2016 was due to a high return on wealth but this factor was offset in both cases by negative savings. Relative indebtedness fell for the middle class from 2010 to 2013 as outstanding debt continued to drop and again from 2013 to 2016 due to high wealth and income growth. Wealth inequality as measured by the Gini coefficient increased somewhat from 2010 to 2013 and again from 2013 to 2016.

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1. Introduction

Relying on calculations from the Survey of Consumer Finances (SCF) from the Federal Reserve Board of Washington, this paper documents trends in household net worth and net worth inequality over the 33 years from 1983 to 2016. Particular attention is devoted to how the middle class fared over years 2007 to 2010, during one of the sharpest declines in stock and real estate prices, and over years 2010 to 2016 as asset prices recovered. The debt of the middle class exploded from 1983 to 2007, already creating a fragile middle class. The main question is whether their position deteriorated over the "Great Recession" and recovered after that.[1] I also investigate what has happened to the inequality of household wealth over these years, particularly from 2007 to 2016.[2] Asset prices plunged between 2007 and 2010 but then rebounded from 2010 to 2016. The most telling finding is that median wealth plummeted by 44 percent over years 2007 to 2010, almost double the drop in housing prices, and by 2010 was at its lowest level since 1969. From 2010 to 2016, median wealth did rebound, though by only 17.4 percent. Median wealth in 2016 was still 34 percent down from its peak in 2007. The inequality of net worth, as measured by the Gini coefficient, after almost two decades of little movement, was up sharply from 2007 to 2010. It then increased moderately from 2010 to 2016, though the wealth share of the top one percent shot up by 4.5 percentage points. Middle class debt, with the exception of student loans, contracted sharply from 2007 to 2013 but then rose slightly from 2013 to 2016.

The rest of the paper is organized as follows. The next section, Section 2 provides historical background. Section 3 discusses the measurement of household wealth and describes the data sources used for this study. Section 4 presents time trends for median and average wealth holdings and Section 5 on the inequality of household wealth. Section 6 looks at changes in the portfolio composition of household wealth over years 1983 to 2016 (the period for which consistent data exists) and rates of return on household wealth over the same period. It also looks at developments in ownership rates for selected assets. Particular attention is paid to changes in relative indebtedness.

Are the rich really different from the rest of the population? Section 6.1 looks at the pattern of wealth holdings of the rich in comparison to the middle class. The rather staggering debt level of the middle class in 2016, as we shall see below, raises the question of whether this is a recent phenomenon or whether it has been going on for some time. Section 6.2 focuses on changes in the debt of the middle class

[1] Though the "official" recession ended in June, 2009, according to the NBER definition, I refer to the period 2007 to 2013 as the "Great Recession," since median income and wealth showed no recovery over these years.

[2] This paper updates Chapters 3, 3, and 5 of Wolff (2017) to the year 2016.

over this time period. Differences in portfolio composition, particularly leverage (indebtedness) between wealth classes translates into large disparities in rates of return on household wealth over time, as documented in Section 7. A summary of results and concluding remarks are provided in Section 8.

2. Historical background

The last two decades have witnessed some remarkable events. Perhaps, most notable was the housing value cycle which first led to an explosion in home prices and then a collapse, affecting net worth and helping to precipitate the Great Recession, followed by a strong recovery. The median house price remained virtually the same in 2001 as in 1989 in real terms.[3] However, the homeownership rate shot up from 62.8 to 67.7 percent. Then, 2001 saw a recession (albeit a short one). Despite this, house prices suddenly took off and over the years 2001 to 2007 housing prices gained 19 percent. The homeownership rate continued to expand, though at a somewhat slower rate, from 67.7 to 68.6 percent.

Then, the recession and associated financial crisis hit. The recession officially began in December, 2007, and "officially" ended in June, 2009.[4] Over this period, real GDP fell by 4.3 percent and then from the second quarter of 2009 to the second quarter of 2013 it gained 9.2 percent. After that it grew by another 6.8 percent through the third quarter of 2016.[5] The unemployment rate shot up from 4.4 percent in May of 2007 to a peak of 10.0 percent in October of 2009 but by October of 2016 it was down to 4.9 percent. [6]

One consequence was that asset prices plummeted. From 2007 to 2010, the median home price (in constant dollars) nose-dived by 24 percent, and the share of households owning their own home fell off, from 68.6 to 67.2 percent. This was followed by a partial recovery, with median house prices rising 7.8 percent through September 2013, though still far below its 2007 value. However, the homeownership rate continued to contract, falling to 65.1 percent. In contrast, median home prices in real terms jumped by 18.4 percent from 2013 to 2016, though the homeownership rate continued to fall to 63.7 percent.

In contrast to the housing market, the stock market boomed during the 1990s. On the basis of the

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[3] The source for years 1989 to 2007 is Table 935 of the *2009 Statistical Abstract*, US Bureau of the Census, available at http://www.census.gov/compendia/statab/. For years after 2007, the source is: National Association of Realtors, "Median Sales Price of Existing Single-Family Homes for Metropolitan Areas," available at: http://www.realtor.org/sites/default/files/reports/2012/embargoes/2012-q1-metro-home-prices-49bc10b1efdc1b8cc3eb66dbcdad55f7/metro-home-prices-q1-single-family-2012-05-09.pdf [both accessed October 17, 2014].The figures are based on median prices of existing houses for metropolitan areas only. All figures are in constant (2016) dollars unless otherwise indicated.

[4] The source is: http://www.nber.org/cycles/cyclesmain.html [accessed April 20, 2014]. As noted above, I use the term "Great Recession" to refer to the period from 2007 through 2013.

[5] The source for the GDP figures is http://www.bea.gov/iTable/index_nipa.cfm [accessed December 1, 2016].

[6] The source is the U.S. Bureau of Labor Statistics at: http://data.bls.gov/timeseries/LNS14000000 [accessed December 1, 2016].

Standard & Poor (S&P) 500 index, stock prices surged 159 percent in constant dollars between 1989 and 2001.[7] Stock ownership spread and by 2001 over half of U.S. households owned stock either directly or indirectly (see Section 6 below). However, the stock market peaked in 2000 and was down by 11 percent from 2000 to 2004. From 2004 to 2007, the stock market rebounded, with the S&P 500 rising 19 percent. From 2001 to 2007, stock prices were up 6 percent. However, the stock ownership rate fell to 49 percent. Then came the Great Recession. Stock prices crashed from 2007 to 2009 and then partially recovered in 2010 for a net decline of 26 percent. The stock ownership rate also once again declined, to 47 percent. The stock market continued to rise after 2010 and by 2013 was up 39 percent over 2010 and above its previous high in 2007. However, the stock ownership rate continued to drop, to 46 percent. Once again, the stock market continued to boom from 2013 to 2016, up by 27.9 percent in real terms, but in this case the stock ownership rate rebounded to 49.3 percent.

What have all these major changes asset price trends wrought in terms of household wealth, particularly over the Great Recession? This is the subject of the remainder of this paper.

3. Data sources and methods

The primary data source used for this study is the Survey of Consumer Finances (SCF). Each survey consists of a core representative sample combined with a high-income supplement. The wealth concept used here is marketable wealth (or net worth), defined as the current value of all marketable or fungible assets less debt. Assets are the sum of: (1) housing; (2) other real estate; (3) bank deposits, certificates of deposit, money market accounts, and the cash surrender value of life insurance plans (collectively, “liquid assets”); (4) financial securities; (5) defined contribution (DC) pension plans, including IRAs, Keogh, and 401(k) plans; (6) corporate stock and mutual funds; (7) unincorporated businesses equity; and (8) trust fund equity. Liabilities are the sum of: (1) mortgage debt, (2) consumer debt such as auto loans, and (3) other debt such as educational loans.

This measure reflects wealth as a store of value and therefore a source of potential consumption. I believe that this is the concept that best reflects the level of well-being associated with a family's holdings. Thus, only assets that can be readily converted to cash (that is, "fungible" ones) are included. As a result, consumer durables such as automobiles are excluded here, since these items are not easily marketed. Another justification for their exclusion is that this treatment is consistent with the national accounts, where purchase of vehicles is counted as expenditures, not savings. Also excluded is the value of future Social Security benefits the family may receive upon retirement ("Social Security wealth"), as

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[7] The source for stock prices is Table B-96 of the *Economic Report of the President, 2013*, available at http://www.gpoaccess.gov/eop/tables13.html, with updates to 2013 from: http://us.spindices.com/indices/equity/sp-composite-1500 [both accessed October 17, 2014].

well as the value of retirement benefits from defined benefit private pension plans ("defined benefit pension wealth"). Even though these funds are a source of future income to families, they are not in their direct control and cannot be marketed.

4. Median wealth plummets over the Great Recession

Table 1 documents a robust growth in wealth from 1983 to 2007 (also see Figure 1). Median wealth increased at an annual rate of 1.13 percent from 1983 to 1989, a little faster at 1.22 percent from 1989 to 2001, and then much faster at 2.91 percent from 2001 to 2007.[8] Then between 2007 and 2010, median wealth plunged by a staggering 44 percent! Indeed, median wealth was actually lower in 2010 than in 1969 (in real terms). The primary reasons, as we shall in Section 7, were the collapse in the housing market and the high leverage of middle class families. However, median wealth rebounded somewhat from 2010 to 2016, climbing by 17.4 percent, though it was still 34 percent below its peak in 2007 (and even below its value in 1983).[9] As shown in the third row of Panel A, the percentage of households with zero or negative net worth increased from 15.5 percent in 1983 to18.6 percent in 2007 and then even more sharply to 21.8 percent in 2010, before dropping slightly to 21.2 percent in 2016.

[Table 1 and Figure 1 about here]

Mean net worth also grew vigorously from 1983 to 1989, at an annual rate of 2.27 percent per year, about double the growth rate of median wealth. Over years 1989 to 2001, the growth rate of mean wealth was 3.02 percent per year, even higher than in the preceding periods. Its annual growth rate then reached 3.10 percent between years 2001 and 2007, largely due to the rapid (19 percent) increase in housing prices. Mean wealth in 2007 was almost double its value in 1983 and about three quarters larger than in 1989. Another point of note is that mean wealth grew more about twice as fast as the median between 1983 and 2007, indicating widening inequality of wealth over these years.

The Great Recession also saw an absolute decline in mean household wealth. However, whereas median wealth plunged by 44 percent between 2007 and 2010, mean wealth fell by (only) 16 percent.[10] The main cause was both falling housing and stock prices (see Section 7). However, here, too, the relatively faster growth in mean wealth than median wealth (that is, the latter's more moderate decline)

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[8] Unless otherwise indicated, all dollar figures are in 2013 dollars.

[9] The percentage decline in median net worth from 2007 to 2010 was lower when vehicles are included in the measure of wealth – "only" 39 percent. The reason is that automobiles comprise a substantial share of the assets of the middle class. However, median net worth with vehicles remained virtually unchanged from 2010 to 2013. From 2013 to 2016, it rose by 16 percent in constant dollars.

[10] The decline in mean net worth was also 16 percent when vehicles are included in net worth.

was coincident with rising wealth inequality. Years 2010 to 2016 did finally see a full recovery in mean wealth, with it rising by 28 percent to $667,600, 7.6 percent above its previous 2007 peak.

Median household income (based on Current Population Survey data) advanced at a fairly solid pace from 1983 to 1989, at 2.03 percent per year (also see Figure 2). After that, its annual growth dipped to only 0.48 percent from 1989 to 2001 and then to 0.26 percent from 2001 to 2007, for a net change of 22 percent (overall) from 1983 to 2007. However, from 2007 to 2010, it fell off in absolute terms by 6.7 percent. Though this is not an insignificant amount, the reduction was not nearly as great as that in median wealth (or median FR). From 2010 to 2013, median income slipped by another 1.3 percent, though it did turn around in 2016 showing a 6.9 percent gain compared to 2013. All in all median income was still slightly below its high point in 2007.

[Figure 2 about here]

Mean income gained 2.66 percent per year from 1983 to 1989, 1.21 percent per year from 1989 to 2001, and then -0.14 percent per year from 2001 to 2007, for a total change of 35 percent from 1983 to 2007. Between 1983 and 2007, mean income grew less than mean net worth and median income grew at a much slower pace than median wealth. However, mean income also dropped in real terms from 2007 to 2010, by 5.2 percent, slightly less than that of median income, but gained 0.9 percent from 2010 to 2013. From 2013 to 2016 it was up to $83,100, 2.6 percent above its previous peak in 2007.

In sum, while household income virtually stagnated for the average American household from 1989 to 2007, median net worth grew strongly. The Great Recession, on the other hand, saw a massive destruction of median net worth but much more modest declines in mean wealth and both median and mean income. Mean net worth and mean income did recover by 2016 but median net worth was still well below its 2007 value, and median income slightly below.

5. Wealth inequality jumps over the Great Recession

Net worth is highly concentrated, with the richest 1 percent (as ranked by wealth) owning 39.6 percent of total household wealth in 2016 and the top 20 percent owning 89.9 percent (see Table 2 and Figure 3). The figures in Table 2 also show that wealth inequality, after increasing from 1983 to 1989, remained virtually unchanged from 1989 to 2007, at least according to the Gini coefficient (also see Figure 4). The share of wealth held by the top one percent rose by 1.4 percentage points from 1983 to 1989 and the Gini coefficient increased from 0.799 to 0.828.

[Table 2, Figure 3, and Figure 4 about here].

Between 1989 and 2007, the share of the top percentile actually declined a bit, from 35.2 to 34.6 percent, though this was more than compensated for by an increase in the share of the next four percentiles. As a result, the share of the top five percent increased from 58.0 percent in 1989 to 61.8

percent in 2007, and the share of the top quintile rose from 83.0 to 85.0 percent. The share of the fourth and middle quintiles each declined by about a percentage point from 1989 to 2007, while that of the bottom 20 percent increased by 0.2 percentage point. Overall, the Gini coefficient saw a very small rise, from 0.828 in 1989 to 0.834 in 2007.

The years 2007 to 2010 saw a sharp elevation in wealth inequality, with the Gini coefficient rising from 0.834 to 0.866. Interestingly, the share of the top percentile showed a smaller relative gain -- less than a one percentage point gain. Most of the rise in wealth share took place in the remainder of the top quintile, and overall the share of wealth held by the top quintile climbed by 3.6 percentage points. The shares of the other quintiles, correspondingly, dropped, with the share of the second quintile falling by 0.4 percentage points and that of the bottom quintile by 0.7 percentage points.

From 2010 to 2013 there was a small rise in the Gini coefficient, from 0.866 to 0.871. The share of the top one percent did increase by 1.6 percentage points but there was virtually no change in the share of the top quintile. In constant dollar terms, the net worth of the top one percent grew by 5.9 percent over those years but that of the next 19 percent was down by 1.8 percent. The wealth of the fourth quintile also lost 1.7 percent, that of the middle quintile fell 0.7 percent, and that of the bottom forty percent declined 5.7 percent. Then, from 2013 to 2016 the Gini coefficient showed another small gain, to 0.877. However, the share of the top one percent experienced a huge increase, from 36.7 to 39.6 percent. The share of the next 19 percent went down, so that the wealth share of the top 20 percent advanced only 1.0 percentage points and that of the bottom 80 percent decreased by 1.0 percentage point.

The top 1 percent of families (as ranked by income on the basis of the SCF data) earned 24 percent of total household income in 2015 and the top 20 percent accounted for 64 percent -- large figures but lower than the corresponding wealth shares (also see Figure 4).[11] The time trend for income inequality also contrasted with that of net worth (also see Figure 5). Income inequality showed a sharp rise from 1961 to 1982, with the Gini coefficient expanding from 0.428 to 0.480 and the share of the top one percent up from 8.4 to 12.8 percent. Income inequality increased sharply again between 1982 and 1988, with the Gini coefficient rising from 0.480 to 0.521 and the share of the top one percent from 12.8 to 16.6 percent.

Inequality again surged from 1988 to 2000, with the share of the top percentile rising by 3.4 percentage points, the share of the top quintile up by 3.0 percentage points, the shares of the other quintiles falling again, and the Gini index advancing from 0.521 to 0.562. All in all, the years from 1989 to 2001 saw almost the same degree of increase in income inequality as the 1983-1989 period. Inequality

[11] It should be noted that the income in each survey year (say 2016) is for the preceding year (2015 in this case).

once again rose from 2001 to 2007, though the pace slackened. The Gini coefficient increased from 0.562 to 0.574, the share of the top one percent was up by 1.3 percentage points, the share of the top quintile was up by 1.7 percentage points, and the shares of the other quintiles fell. All in all, the period from 2001 to 2007 witnessed a moderate increase in income inequality and a small rise in wealth inequality.

Perhaps, somewhat surprisingly, the years 2007 to 2010 witnessed a rather sharp contraction in income inequality. The Gini coefficient fell from 0.574 to 0.549 and the share of the top one percent dropped sharply from 21.3 to 17.2 percent. Property income and realized capital gains (which are included in the SCF definition of income), as well as corporate bonuses and the value of stock options, plummeted over these years, a process which explains the steep decline in the top percentile share. Real wages, as noted above, actually rose over these years, though the unemployment rate also increased. As a result, the income of the middle class was down but not nearly as much in percentage terms as that of the high income groups. In contrast, transfer income such as unemployment insurance rose, so that the bottom also did better in relative terms than the top. As a result, overall income inequality fell over years 2006 to 2009.

The second half of the Great Recession saw a reversal in this trend, with income inequality once again increasing sharply. The Gini coefficient increased by 0.025 points to 0.574, the same level as in 2007. The share of the top percentile rose to 19.8 percent, somewhat below its 2007 level, while the share of the top quintile was up to 61.8 percent, slightly above its level in 2007. The same set of factors, though in reverse, help explain this turnaround in income inequality. Property income, realized capital gains, and associated income rose sharply over these years as the stock market recovered, accounting for the sharp rise in the share of the top percentile. The unemployment rate fell over these years but real wages were down, according to the BLS figures. As a result, the income of the middle class rose but not nearly as much in percentage terms as that of the high income groups. Transfer income such as unemployment insurance fell, as the extensions of benefits enacted in the early days of the recession ended.

Income inequality surged once again from 2012 to 2015, with the Gini coefficient rising from 0.574 to 0.598, the share of the top one percent from 19.8 to 23.5 percent, and that of the top quintile from 61.8 to 64.0 percent. Once again, a substantial rise in property income, realized capital gains, and associated income as the stock market continued to boom helped account for rising inequality.

All in all, income inequality increased much more than net worth inequality over years 1983 to 2016. On the basis of the Gini coefficient, net worth inequality was up by 9.8 percent, while income inequality rose by 24.5 percent.

6. Household debt expands and then recedes

In 2016, owner-occupied housing was the most important household asset in the average portfolio

breakdown for all households shown in Table 3, accounting for 25 percent of total assets. However, net home equity -- the value of the house minus any outstanding mortgage -- amounted to only 17 percent of total assets. Real estate, other than owner-occupied housing, comprised 10 percent, and business equity another 20 percent. Demand deposits, time deposits, money market funds, CDs, and the cash surrender value of life insurance (collectively, "liquid assets") made up 6.7 percent and pension accounts 15.6 percent. Bonds and other financial securities amounted to 1.3 percent; corporate stock, including mutual funds, to 16.1 percent; and trust fund equity to 3.4 percent. Debt as a proportion of gross assets was 12.5 percent, and the debt to net worth ratio was 0.14.

[Table 3 about here]

There were some notable changes in the composition of household wealth over years 1983 to 2016. First, the share of housing wealth in total assets, after fluctuating between 28 and 30 percent from 1983 to 2001, jumped to 34 percent in 2004 but then declined to 29 percent in 2013 and 25 percent in 2016. Two factors explain this movement. The first is the homeownership rate, which rose from 63.4 percent in 1983 to 69.1 percent in 2004 and then fell off to 63.7 percent in 2016. The second is the median house price for existing one-family homes, which rose by 18 percent between 2001 and 2004 and then plunged by 17 percent from 2004 to 2013, though it did recover by 18 percent from 2013 to 2016.[12]

A second and related trend is that net home equity, after falling almost continuously from 23.8 percent of total assets in 1983 to 18.2 percent in 1998, picked up to 21.8 percent in 2004 but then fell again to 16.5 percent in 2016. The difference between the two series (gross versus net housing values) is attributable to the changing magnitude of mortgage debt on homeowner's property, which increased from 20.9 percent in 1983 to 34.8 percent in 2004, rose further to 39.3 percent in 2013, but then fell off to 34.4 percent in 2016. Moreover, mortgage debt on principal residence climbed from 9.4 of total assets in 2001 to 12.7 percent in 2010 before receding to 8.6 percent in 2016. The increase in net home equity as a proportion of assets between 2001 and 2004 reflected the strong gains in real estate values over these years; its sharp decline from 2007 to 2013 reflected the steep fall in housing prices over those years; and the pick-up from 2013 to 2016 was due to strong gains in housing prices.

Third, overall relative indebtedness first increased, with the debt to net worth ratio climbing from 15.1 percent in 1983 to 20.6 percent in 2010, and then fell off to 17.9 percent in 2013 and then to 14.3 percent in 2016. Likewise, the debt-income ratio surged almost continuously over time from 68 percent in 1983 to 127 percent in 2010 but then dropped off sharply to 95 percent in 2016. If mortgage debt is

[12] It may seem surprising that the share of housing in gross assets declined very little between 2007 and 2010, given the steep drop in housing prices, but the prices of other assets also fell over this period, particularly those of stocks and business equity.

excluded, then the ratio of other debt to total assets actually fell off over time from 6.8 percent in 1983 to 3.9 percent in 2016.

The large rise in *relative* indebtedness among all households between 2007 and 2010 could be due to a rise in the absolute level of debt and/or a fall-off in net worth and income. As shown in Table 1, both mean net worth and mean income fell over the three years. There was also a slight contraction of debt in constant dollars, with mortgage debt declining by 5.0 percent, other debt by 2.6 percent, and total debt by 4.4 percent. Thus, the steep rise in the debt-net worth and the debt-income ratios over the three years was entirely due to the reduction in wealth and income. In contrast, from 2010 to 2013, relative indebtedness declined. In this case, both net worth and incomes were relatively unchanged, so that the proximate cause was a sizeable reduction in household debt. In fact, average mortgage debt (in constant dollars) dropped by 13 percent, the average value of other debt by 11 percent, and average household debt by 13 percent. The further decline in these ratios in 2016, however, reflected sizeable gains in both mean wealth and mean income. Though average mortgage debt diminished by 4.8 percent, the average value of other debt jumped by 20 percent, and average household debt rose by 1.7 percent.

A fourth change is that pension accounts rose from 1.5 to 16.5 percent of total assets from 1983 to 2013 though the ratio did fall off slightly to 15.6 percent in 2016. This increase largely offset the decline in the share of liquid assets in total assets, from 17.4 percent in 1983 to 6.7 percent on 2016, so that it is reasonable to infer that to a large extent households substituted tax-deferred pension accounts for taxable savings deposits. Fifth, if we include the value of stocks indirectly owned through mutual funds, trusts, IRAs, 401(k) plans, and other retirement accounts, then the value of total stocks owned as a share of total assets more than doubled from 11.3 percent in 1983 to 24.5 percent in 2001, and then tumbled to 17.5 percent in 2010 before rising to 22.4 percent in 2016. The rise during the 1990s reflected the bull market in corporate equities as well as increased stock ownership, while the decline in the 2000s was a result of the sluggish stock market as well as a drop in stock ownership. The increase from 2010 to 2016 reflected the recovery of the stock market.

6.1 Portfolio composition by wealth class

The tabulation in Table 3 provides a picture of the average holdings of all families in the economy, but there are marked class differences in how middle-class families and the rich invest their wealth. As shown in Table 4, the richest one percent of households (as ranked by wealth) invested 80 percent of their savings in investment real estate, businesses, corporate stock, and financial securities in 2016. Corporate stocks directly or indirectly owned comprised 26 percent. Housing, liquid assets, and pension accounts together made up 18 percent. Their debt- net worth ratio was only 2.4 percent, their debt- income ratio was 35 percent, and the ratio of mortgage debt to house value was 15.4 percent.

[Table 3 about here]

Among the next richest 19 percent of U.S. households, housing comprised 26 percent of their total assets, liquid assets 7.7 percent, and pension assets another 22.4 percent. Investment assets -- real estate, business equity, stocks, and bonds – made up 41 percent and 25 percent was in the form of stocks directly or indirectly owned. Debt amounted to 10.1 percent of net worth and 89 percent of their income, and the ratio of mortgage debt to house value was 26.5 percent.

In contrast, over three-fifths of the assets of the middle three wealth quintiles of households was invested in their own home in 2016. However, home equity amounted to only a third of total assets, a reflection of their large mortgage debt. Another quarter went into monetary savings of one form or another and pension accounts. Together housing, liquid assets, and pension assets accounted for 87 percent of the total assets of the middle class. The remainder was about evenly split among non-home real estate, business equity, and various financial securities and corporate stock. Stocks directly or indirectly owned amounted to only 9.7 percent of their total assets. The debt-net worth ratio was 59 percent, substantially higher than for the richest 20 percent, and the debt-income ratio was 120 percent, also much higher than that of the top quintile. Finally, mortgage debt amounted to 46 percent of their home value.

Almost all households among the top 20 percent of wealth holders owned their own home, in comparison to 67 percent of households in the middle three quintiles. Three-quarters of households in the top percentile owned some other form of real estate, compared to 47 percent of those in the next 19 percent of the distribution and only 12 percent of households in the middle 60 percent. Over 90 percent of the top group had a pension account, compared to 84 percent of the next 19 percent and 49 percent of the middle. A stunning two thirds of the top group reported owning their own business. The comparable figures were 29 percent among the next 19 percent and only 7.8 percent of the middle class.

Among the top group, 89 percent held corporate stock, mutual funds, financial securities or a trust fund, in comparison to 62percent of the next 19 percent and only 15.3 percent of the middle group. Ninety-four percent of the top percentile reported owning stock either directly or indirectly, compared to 86 percent of the next 19 percent and 45 percent of the middle. If we exclude small holdings of stock, then the ownership rates dropped off sharply among the middle three quintiles, from 45 percent to 34 percent for stocks worth $5,000 or more and to 28 percent for stocks worth $10,000 or more.

Table 4 looks at trends in the wealth composition of the middle three wealth quintiles as well as asset ownership rates. Perhaps, the most striking development was the homeownership rate, which after rising almost continuously over time from 72 percent in 1983 to 78 percent in 2004, plunged by 11 percentage points to 67 percent in 2016. This trend was more pronounced than that among all households, among whom the homeownership rate dropped from 69.1 percent in 2004 to 63.7 percent in 2016. A

similar trend is evident for the share of home values in the value of total assets, which remained virtually unchanged from 1983 to 2001 but then rose sharply in 2004. This increase was largely a result of rising house prices and secondarily a consequence of the continued gain in the homeownership rate. The share then declined from 2004 through 2016 as the homeownership rate plummeted.

[Table 4 about here]

It might seem surprising that despite the steep drop in home prices from 2007 to 2010, housing as a share of total assets actually fell only slightly. The reason is that the other components of wealth fell even more than housing. While mean housing fell by 31 percent in real terms, the mean value of other real estate was down by 39 percent and that of stocks and mutual funds by 47 percent. Likewise, despite the modest recovery in housing prices from 2010 to 2013, the share of housing in total assets dropped by 2.3 percentage points. The mean value of housing fell by 7.3 percent. Of this, the decline in the homeownership rate accounted for only 19 percent of the overall decline, while the main culprit was the decline in the mean values of houses among households in the middle three wealth quintiles, which explained 81 percent. From 2013 to 2016 homes as a proportion of total assets declined a bit more (0.6 percentage points), even though the mean value of homes increased by 7.7 percent in real terms. The explanation is that the value of other assets like businesses, pension assets, financial securities, and particularly corporate stock holdings advanced even more.

The share of pension accounts in total assets rose by 15.4 percentage points from 1983 to 2016, while that of liquid assets declined by 12.9 percentage points. This trend was more or less continuous over time. This set of changes paralleled that of all households. In contrast, the share of middle class households holding a pension account, after surging by 41.2 percentage points, from 12.2 percent in 1983 to 53.4 percent in 2007, contracted to 48.9 percent in 2016. From 2007 to 2010 the mean value of pension accounts fell quite sharply, by 25 percent, though this was less than that of average overall assets, so that the share of pension accounts in total assets rose. From 2010 to 2013, in contrast, mean pension accounts were up by 12 percent, despite the slight decline in the ownership rate, so that the share of pension accounts in total assets strengthened considerably (by 2.2 percentage points). Over years 2013 to 2016 average pension values were up by 11.6 percent and the share holding pensions rose by 4.5 percentage points, leading to another rise in pensions as a proportion of gross assets over these years.

The share of all stocks in total assets mushroomed from 2.4 percent in 1983 to 12.6 percent in 2001 and then fell off to 8.1 percent in 2010 as stock prices stagnated and then collapsed and middle class households divested themselves of stock holdings. The proportion then rebounded to 9.7 percent in 2016 as the stock market recovered. The stock ownership rate among the middle class also shot up quickly from 17 percent in 1983 to 51 percent in 2001, when it peaked. It then declined steeply to 41 percent in

2013 but recovered to 45 percent in 2016. In similar fashion, the share of middle class households owning either corporate stock, financial securities, mutual funds or a personal trust rose from 22 percent in 1983 to 28 percent in 2001 and then plunged almost by half to 14 percent in 2013. There was a slight recovery in 2016. Much of the decline took place between 2007 and 2010, as middle class households got scared off by the stock market collapse of those years.

6.2 The evolution of middle class debt

The rather staggering debt level of the middle class in 2016 raises the question of whether this is a recent phenomenon or whether it has been going on for some time. The debt to income ratio peaked in 2007 and then contracted substantially in 2010 and receded a bit more in 2013 and 2016, while the debt to net worth ratio peaked in 2010 and then fell off sharply in 2013 and again in 2016.

There was a sharp rise in the debt to net worth ratio of the middle class from 37 percent in 1983 to 61 percent in 2007. There was a particularly steep uptick between 2001 and 2004, a reflection mainly of rising mortgage debt. The debt to income ratio skyrocketed from 1983 to 2007, more than doubling. Once, again, much of the increase happened between 2001 and 2004. In constant dollar terms, the mean debt of the middle class shot up by a factor of 2.6 between 1983 and 2007, mortgage debt by a factor of 3.2, and other debt by a factor of 1.5. The rise in the debt to net worth ratio and the debt-income ratio was much more pronounced than for all households. In 1983, for example, the debt to income ratio was about the same for the middle class as for all households but by 2007 the ratio was much larger for the former.

After the Great Recession hit, the debt to net worth ratio continued to rise, reaching 72 percent in 2010 but there was actually a retrenchment in the debt to income ratio, falling to 134 percent in 2010. The reason is that from 2007 to 2010, the mean debt of the middle class actually contracted by 25 percent in constant dollars (see Table 9). Average mortgage debt declined by 23 percent, as families paid down their outstanding balances, while the mean value of other debt plummeted by 32 percent, as families paid off credit card and other consumer debt. Among all households, in contrast, mortgage debt in constant dollars fell by only 5 percent and other debt by only 2.6 percent. The significant rise in the debt to net worth ratio of the middle class between 2007 and 2010 was due to the steeper drop off in net worth than in debt, while the decline in the debt-income ratio of this group was exclusively due to the sharp contraction of overall debt.

Both the debt to net worth and the debt-income ratios fell from 2010 to 2013 for the middle class. The proximate cause was a decline in overall mean debt, which fell by 8.2 percent in real terms over these years. This, in turn, was due to a decline in average mortgage debt, which dropped by 10.4 percent. The average balance on other debt actually increased slightly, by 1.6 percent. Average overall debt fell even more among all households, by 13 percent, with mortgage debt down by 13 percent and other debt down

by 11 percent. There was a further decline in relative indebtedness from 2013 to 2016, particularly relative to net worth. In this case, average mortgage debt held steady while the average value of all other debt mushroomed by 17 percent. Overall average debt rose by 3.3 percent. The decline in relative indebtedness was entirely due to the sharp increase in mean income and wealth.

As for all households, net home equity as a percentage of total assets for the middle class fell rather continuously from 1983 to 2016. Mortgage debt as a proportion of house value rose through 2010 and then fell off a bit by 2016, though still far above its 1983 level. The decline in the former between 2007 and 2010 was relatively small despite the steep decrease in home prices, a reflection of the sharp reduction in mortgage debt. There was virtually no change from 2010 to 2013, followed by a rebound over the next three years due to rising home prices. On the other hand, the rise in the ratio of mortgage debt to house values was relatively large over years 2007 to 2010 because of the fall-off in home prices. This ratio actually contracted somewhat from 2010 to 2013 as outstanding mortgage debt fell and then declined steeply over the next three years due to rising home prices.

7. The role of leverage in explaining time trends in median wealth and wealth inequality

7.1 Rates of return

Table 6 shows average annual *real* rates of return for both gross assets and net worth over the period from 1983 to 2013. Results are based on the average portfolio composition over the period and assume that all wealth groups receive the same rate of return, on average, by asset type. In particular, it is assumed that there are no systematic differences in returns on, for example, stocks by wealth class.

[Table 6 about here]

What is the evidence supporting this assumption? First, one rather early study, Blume et. al. (1974, p. 26), looked at the relation of dividend yield to household income in 1969. The study found that dividend yield, rather interestingly, varied inversely with income but the range was very small (2.51 percent to 2.78 percent). Second, Johnson, Raub, and Newcomb (2013) used micro estate tax data of 2007 decedents matched to 2006 income tax returns to analyze rates of return by wealth class. If anything, they found slightly decreasing rates of returns for some asset classes by wealth level. Third, much more recently Saez and Zucman, SZ (2016) provided three pieces of evidence supporting this assumption. The first piece was based on Statistics of Income (SOI) tabulations of matched estate-income returns for 2008. SZ found that within-asset-class returns were fairly constant across wealth groups. The second source of evidence was the internal SOI matched estate and income tax files over years 1996–2011 period. SZ matched the estate tax returns of non-married individuals dying in this period to their prior-year income tax returns. They found that the interest rate on bonds and deposits did not vary much with wealth level. In 1997, for example, the interest rate was 3.9 percent on aggregate, and between 4.1 and 4.3 percent for

all groups of estate tax payers ranging from $0.5–1 million to more than $20 million. The third source was a sample of estates filed in 1977. SZ once again found that rates of return within asset class were very similar across wealth groups. Individuals in the top 0.1 percent and top 0.01 percent had an average dividend yield of 4.7 percent, about the same as the average dividend yield of 5.1 percent among all decedents. The preponderance of the evidence does suggest that there is little systematic variation of rates of return by wealth or income level.

It is first of interest to look at the results for all households. The overall average annual rate of return on gross assets rose from 2.33 percent in the 1983-1989 period to 3.33 percent in the 1989-2001 period and then fell slightly to 3.10 percent in the 2001-2007 period before plummeting to -6.38 percent over the Great Recession. This was followed by a substantial recovery to 4.83 percent over years 2010 to 2013 and again to 5.42 percent from 2013 to 2016.

The average annual rate of return on net worth among all households also increased from 3.32 percent in the first period to 4.35 percent in the second , declined somewhat to 4.04 percent in the third and then fell off sharply to -7.28 percent in the 2007-2010 period. Once again, there was a strong recovery to 6.20 percent in the 2010-2013 period and again to 6.46 percent in 2013-2016. It is first of note that the annual returns on net worth were uniformly higher – by about one percentage point – than those of gross assets over the first three periods and the last two periods, when asset prices were rising. However, in the 2007-2010 period, the opposite was the case, with the annual return on net worth about one percentage point lower than that on gross assets. These results illustrate the effect of leverage, raising the return when asset prices rise and lowering the return when asset prices fall. Over the full 1983-2016 period, the annual return on net worth was 0.85 percentage points higher than that on gross assets.

There were striking differences in rates of return by wealth class. The highest returns on gross assets were registered by the top one percent of wealth holders, followed by the next 19 percent and then by the middle three wealth quintiles. The one exception was the 2007-2010 period when the next 19 percent was first (the least negative), followed by the top one percent and then the middle three quintiles. The differences were quite substantial. Over the full 1983-2016 period, the average annual return on gross assets for the top one percent was 0.57 percentage points greater than that of the next 19 percent and 1.44 percentage points greater than that of the middle quintiles. The differences reflected the greater share of high yield investment assets like stocks in the portfolios of the rich and the greater share of housing in the portfolio of the middle class (see Tables 4 and 5). Indeed, in the 2010-2013 period, there was a huge cleavage in returns between the top and middle groups of 2.63 percentage points, reflecting the much higher gains on stocks and investment assets than on housing in those years.

This pattern is almost exactly reversed when we look at returns on net worth. In this case, in the first three and last two periods, when asset prices rose, the highest returns were recorded by the middle three wealth quintiles but in the 2007-2010 period, when asset prices were declining, the middle group registered the lowest (that is, most negative) rate of return. The exception was the first period when the top one percent had a slightly higher return than the middle class. The reason was the substantial spread in returns on gross assets between the top one percent and the middle group – 1.72 percentage points.

Differences in returns between the top and middle group were quite substantial in some years. In the 2001-2007 period, the average return on net worth was 5.58 percent for the latter and 3.92 percent for the former – a difference of 1.67 percentage points. The spread was less over years 2010 to 2013, only 0.46 percentage points, but much higher in 2013-2016, 3.26 percentage points. The smaller difference in 2010-2013 was due to the much higher returns on the gross assets of the top percentile than of the middle group but the larger difference in 2013-2016 reflected the small differential in returns on gross assets between these two groups of only 0.39 percentage points (due, in turn, to the rapid appreciation of home prices in these years). On the other hand, over years 2007 to 2010, when asset prices declined, the return on net worth was -6.52 percent for the top one percent and -10.55 percent for the middle three quintiles – a differential of 4.04 percentage points in favor of the top one percent.

The spread in rates of return on net worth between the top one percent and the middle three quintiles reflects the much higher leverage of the middle class. In 2016, for example, the debt to net worth ratio of the middle three quintiles was 0.589 while that of the top one percent was 0.024. The debt to net worth ratio of the next 19 percent was also relatively low, at 0.101.

The huge negative return on net worth of the middle three quintiles was largely responsible for the precipitous drop in median net worth between 2007 and 2010, as we shall see in the next section. This factor, in turn, was due to the steep drop in housing prices and the very high leverage of this group. Likewise, the very high return on net worth of the middle group over the 2001-2007 period played the predominant role in explaining the robust advance of median net worth, despite the sluggish growth in median income. This in turn, was a result of high leverage coupled with the boom in housing prices. These two factors also help account for the very high return enjoyed by the middle quintiles over the 2013-2016 period and the consequent rapid increase in median wealth. However, somewhat puzzling is the fact that the rate of return on net worth of the middle group was very high over years 2010 to 2013 – in fact, the second highest of any period – and yet median wealth stagnated over these years.

The substantial differential in returns on net worth between the middle and top groups (four percentage points lower) is one factor which explains why wealth inequality rose sharply between 2007 and 2010 despite the decline in income inequality. Likewise this differential over the 2001-2007 period (a

spread of 1.67 percentage points in favor of the middle quintiles) is a factor which helps account for the stasis in wealth inequality over these years despite the increase in income inequality. The higher rate of return of the middle than the top group over years 2010 to 2013 and also years 2013 to 2016 also helps account for the relative constancy in wealth inequality despite the rise in income inequality.

7.2 Decomposition Analysis

To understand trends in both wealth levels and wealth inequality, it is helpful to undertake a decomposition analysis. I begin with the basic wealth relationship as established in Wolff (1999):

$$(1) \qquad \Delta W_{ct} \equiv W_{ct} - W_{c,t-1} = r_{ct} W_{ct-1} + s_{ct} Y_{ct} + G_{ct}.$$

where W_{ct} = net worth (in constant dollars) for age (or birth) cohort c at time t, r = real rate of return on wealth, Y = household income (in constant dollars), s = savings rate out of household income Y, and G = net inheritances and gifts (in constant dollars).[13]

On the basis of equation (1), the change in wealth over a period can be decomposed into capital revaluation (existing wealth multiplied by the rate of return), savings, and net intergenerational transfers. The analysis will be conducted for five periods: 1983-1989, 1989-2001, 2001-2007, 2007-2010, and 2010-2016.[14] The decomposition of mean wealth will also tell us the relative importance of capital gains and savings in explaining changes in wealth over time. The same decomposition can be used for the wealth of the top one percent and median wealth.[15] For the inequality analysis, I will consider changes over time in the *ratio* of mean wealth of the top one percent to the median. I can then also determine what portion of the change in this difference is due to capital gains and what portion is due to savings.

There are several important methodological issues regarding the implementation of this model that should be addressed before the actual results are shown.

7.2.1 Decomposing changes in average wealth

Let us first consider changes in *aggregate* household wealth from time t to t+1. W_t is the total wealth held by households living in the U.S. at time t and W_{t+1} is the total wealth held by households living in the U.S. at time t+1. If this were a closed economy, then generally speaking the only sources of change, ΔW_t, would be from savings and capital appreciation. However, there may be some "leakages"

[13] As shown in Wolff (2017, Chapter 5), net wealth transfers are generally quite small, so that I ignore them in this paper.

[14] I combine the 2010-2013 and 2013-2016 periods into a single 2010-2016 since according to the SCF data was virtually no change in median and mean wealth from 2010 to 2013.

[15] I use the rate of return of the middle three wealth quintiles as a proxy for the rate of return on median wealth.

and additions for a few reasons. First, a household could make a charitable contribution, which would subtract from current household wealth. Second, someone could die in this time interval and pay estate taxes or leave a charitable bequest. Third, there may also be outflows if an American resident emigrates from the U.S. and takes wealth out of the U.S. over this interval. Fourth, there may be additions to the stock of household wealth if immigrants bring new wealth in. However, if these effects are small, then changes in aggregate wealth are due generally to only savings and capital gains on wealth.

It is true, of course, that the *identity* of the households will, in general, change over time. The two main sources are deaths and the formation of new households from marriage, children moving out of the home, and the like. However, given the stock of household wealth at time t (and ignoring international transfers and charitable giving), the only two sources of wealth change remain capital appreciation and savings. Changes in *mean* wealth over time will also be affected by changes in the household count, which may come about from deaths, the formation of new households, emigration, and immigration.

The comparison becomes more complicated when we consider changes in wealth of particular sub-groups of the population. In this case, households in one group at time t may move to another group at time t+1. This problem is particularly germane to wealth classes. In the case of wealth classes, the same issues of attrition and new entrants may apply as in the case of all households for computing the overall mean. In addition, households may shift their wealth class over time. For example, the households in the top one percent say in 1983 may not be the same as those in the top one percent in 1989. There is a regression to the mean over time, and some households in the top one percent in 1983 may have slipped to the next 19 percent, say.

Let us call the measured change in the mean wealth of the top one percent between time t and t+1 ΔW and ΔW^* the actual change in the mean wealth of the households in the top one percent in year t if we followed exactly the *same households* over time. Then, $\Delta W^* \leq \Delta W$, since some of the original households in the top one percent in year t may have slipped to a lower wealth class in year t+1. Indeed , $\Delta W^* = \Delta W$ only in the special case when the original top one percent households in year t remain in the top one percent in year t+1. Thus, if we call ROR the change in the mean wealth of the top one percent emanating only from capital appreciation on initial wealth, then ROR / ΔW only is a *lower bound* on ROR / ΔW^*, and the contribution of the ROR effect to the change in mean wealth over the period will be biased *downward.* Since savings is imputed as a residual, this will, in general, bias *upward* the estimated savings for that wealth class over the period. Conversely, if households move up into a higher wealth class over the period, then, $\Delta W^* \geq \Delta W$. This may be the case for the median household. In that case, the estimated residual may be biased downward. On the other hand, households may also move to a lower

wealth class, in which case the residual will be biased upward. In general, we cannot tell which way the ROR effect and the residual are biased.

We can directly estimate ROR, the change in the mean wealth of a group emanating only from capital appreciation. The residual will include traditional savings but it will also include net wealth transfers and the effects of new households entering the wealth group over the period and existing households exiting the group.

Table 7 shows the results of a decomposition of the change in mean net worth by wealth class. Considering first the time trend in mean net worth (Panel A), we find that the share of the change in mean net worth from the return on wealth alone (the "ROR effect") more than explains the growth in wealth for each of the five periods. That is to say, if households had simply held onto their assets, their wealth would have grown faster than in actuality. The difference was reflected in the residual – presumably mostly dissavings. The only exception to this pattern was the financial crisis of 2007-2010, when the residual was positive. The results suggest that households in general save only when they experience capital losses – presumably, to make up for their lost wealth. At the median, capital appreciation accounted for more than the total increase of wealth in all periods except 2007-2010 (Panel B). But in this case the residual (mainly savings) was negative in all five periods. Over years 2007 to 2010, the high negative return on assets accounted for 62 percent of the (negative) change in wealth and the residual the other 38 percent.

[Table 7 about here]

The pattern of results is, surprisingly, almost the same for the top one percent as for mean wealth (Panel C). Capital gains more than fully explains the change in their mean wealth in each of the five periods. The residual is negative in all four sub-periods except 2007-2010, when it is positive. As argued above, the ROR effect is likely to be biased upward and thus, the savings effect biased downward. If the bias in the latter is not too great, then once again we find that the top one percent had a positive residual (presumably, mainly savings) only when they experienced capital losses.

As a measure of wealth inequality I use the ratio of the mean wealth of the top one percent to median wealth (Panel D). According to this measure, wealth inequality increased in each of the five periods (row 1).[16] The second row shows what happens to the wealth ratio if capital appreciation only is added to initial wealth. In all five periods, the change in the ratio is reduced, in some cases quite considerably. In the 1983-1989 period, the (slightly) higher return on wealth of the top percentile relative to the middle group would have raised the wealth ratio by 0.8. The wealth ratio rose, instead, by 15.1. Consequently, differences in rates of return between the two groups accounted for 5 percent (0.8/15.1) of

[16] Note that this time trend is rather different from that of the Gini coefficient for net worth.

the increase in the wealth ratio over these years, and the residual (presumably, the relatively smaller dissavings of the top group compared to the middle) accounted for the other 95 percent. In 1989-2001, 2001-2007, and 2010-2016 the higher return on wealth of the middle group relative to the top group would have lowered the wealth ratio by 8.3, 16.4, and 22.2, respectively. Instead, the actual wealth ratio rose in each of these periods, presumably due again to the smaller relative dissavings of the top group. In 2007-2010, the higher return on wealth (that is, the less negative return) of the top relative to the middle would have caused the wealth ratio to rise by 23.3. The ratio actually rose by 91.5, so that differences in rates of return accounted for 25 percent of its rise and differences in the residual the other 75 percent.

8. Summary and concluding remarks

Median household net worth in constant dollars gained 24 percent or 1.19 percent per year over years 1983 to 2001. Over the 2001-2007 period the median increased by 19 percent or 2.91 percent per year, even faster than in the preceding decades. Median income, based on CPS data and also in constant dollars, had a different time trend, rising by 28 percent or 0.92 percent per year from 1962 to 1989, and then by a mere 7.6 percent (in total) from 1989 to 2007.

Then the Great Recession hit and like a tsunami wiped out 40 years of wealth gains. From 2007 to 2010, house prices fell by 24 percent in real terms, stock prices by 26 percent, and median wealth by a staggering 44 percent. By 2010 median wealth was even below where it was in 1969. The share of households with zero or negative net worth rose sharply from 18.6 to 21.8 percent. From 2010 to 2013, asset prices recovered with stock prices up by 39 percent and house prices by 8 percent. Despite this, median wealth stagnated and the share of households with non-positive net worth remained at 22 percent. Over years 2013 to 2016, house prices boomed by 18.4 percent and stock prices surged by 27.9 percent. Median wealth was up by 19 percent, though still by 2016 it was 34 percent below its 2007 peak, and the proportion of households with non-positive net worth was down only slightly. Mean wealth, on the other hand, more than fully recovered and by 2016 was 7.6 percent above its previous 2007 peak. The results indicate that wealth grew more vigorously at the top of the wealth distribution than in the middle.

According to the Gini coefficient, wealth inequality rose sharply from 1983 to 1989 (0.029 Gini point increase). It then remained relatively stable from 1989 to 2007 but showed a steep increase over years 2007 to 2010, with the Gini coefficient climbing from 0.834 to 0.866 and the share of the top 20 percent from 85 to 89 percent. The share of the bottom 40 percent experienced a precipitous drop from 0.2 to -0.8 percent. The Gini coefficient for net worth rose slightly from 2010 and 2013, while the share of the top one percent was up by 1.6 percentage points. There was another moderate rise in the Gini coefficient from 2013 to 2016 while the share of the top one percent shot up by another 2.9 percentage

points. By 2016 the Gini coefficient for net worth and the share of the top one percent were at their highest level over the 54 years, at 0.877 and 39.6 percent, respectively.

In contrast, the Gini coefficient for income inequality, calculated from the SCF data, showed an almost continuous rise from 1962 to 2000 (a stunning 0.135 Gini point advance), a slight remission from 2000 to 2003, and then another jump of 0.034 Gini points through 2006. By 2006 the Gini coefficient for income had reached 0.574. It then dropped substantially from 2006 to 2009 (a decrease of 0.025 Gini points). But income inequality spiked upward from 2009 to 2012, with the Gini coefficient returning to its 2006 level. From 2012 to 2015 there was another surge in income inequality, with the Gini coefficient reaching 0.598, its highest point over the half century plus.

Another notable development was the sharply rising debt to income ratio in the early and mid-2000s, reaching its highest level in almost 25 years, at 119 percent among all households in 2007. Also the ratio of debt to net worth was way up, from 14.3 percent in 2001 to 18.1 percent in 2007. Most of the rising debt was from increased mortgages on homes. From 2007 to 2010, both ratios continued to rise, the former moderately from 119 to 127 percent and the latter more steeply from 18.1 to 20.6 percent. This was true despite a moderate retrenchment of overall average debt of 4.4 percent and reflected the drop in both mean wealth and income. Both ratios fell off sharply by 2013, to 107 percent and 17.9 percent, respectively, as outstanding debt continued to shrink by 13 percent. Average debt then showed a slight upturn of 1.7 percent in constant dollars from 2013 to 2016. However, relative indebtedness continued to fall -- the debt-income ratio down to 95 percent and the debt to net worth ratio down to 14.3 percent – due sharp increases in both mean income and mean wealth.

While home values as a share of total assets among all households remained relatively unchanged from 1983 to 2013 (around 30 percent), net home equity as a share of total assets fell from 24 to 17 percent. This trend reflected rising mortgage debt, which grew from 21 percent of home value in 1983 to 39 percent in 2013. From 2013 to 2016, the share of homes in total assets fell off to 25 percent, despite a boom in house prices. The main reason was a continued decline in the homeownership rate, in this case from 65.1 to 63.7 percent (as well as prices rising faster for other assets). Net home equity as a percentage of total assets fell slightly from 17.3 to 16.5, even though outstanding mortgage debt fell by 4.8 percent. However, this reduction was not enough to compensate for the substantial decline in the ratio of gross home value to total assets.

Among the middle three wealth quintiles (the “middle class”) there was a huge increase in the debt-income ratio from 1.00 in 2001 to 1.57 in 2007 and of the debt to net worth ratio from 0.46 to 0.61. The debt to net worth ratio was also much higher among the middle 60 percent of households in 2007, at 0.61, than among the top one percent, at 0.028. However, from 2007 to 2010, while the debt to net worth

ratio continued to advance to 0.69 percent, the debt to income ratio actually fell off to 1.34. The reason was the substantial retrenchment of debt among the middle class, with overall debt falling by 25 percent in real terms. The fact that the debt to net worth ratio rose over these years was a reflection of the steep, 44 percent, drop in their net worth. Both ratios dropped from 2010 to 2013 as outstanding debt levels continued to fall by 8 percent. From 2013 to 2016 these ratios declined sharply again even though outstanding debt (in constant dollars) rose. The reason is that middle class income and wealth rose strongly over these years.

The key to understanding the plight of the middle class over the Great Recession was their high degree of leverage and the high concentration of assets in their home. The steep decline in median net worth between 2007 and 2010 was primarily due to the very high negative rate of return on net worth of the middle three wealth quintiles (-10.6 percent per year). This, in turn, was attributable to the precipitous fall in home prices and their very high degree of leverage. High leverage, moreover, helped explain why median wealth fell more than house prices over these years. Indeed, using a decomposition analysis I find that the high negative rate of return accounted for 62 percent of the decline in median net worth (with the other 38 percent due mainly to dissavings). In fact, the homeownership rate plunged by 8.9 percentage points from 2007 to 2010. Ownership of pension accounts also fell by 7.7 percentage points, that of financial assets by 7.8 percentage points, and stock ownership by 6.4 percentage points. Middle class households were draining their assets over these years.

What about the (partial) recovery in median net worth from 2010 to 2016? In that period, the high positive rate of return should have led to a $35,100 increase in median wealth, compared to its actual increase of $11,500, so that dissavings reduced the gain by $23,500.

The large spread in rates of return on net worth between the middle three wealth quintiles and the top percentile (over four percentage points) also helped explain why wealth inequality advanced steeply from 2007 to 2010. In a decomposition of the change in the ratio of the mean wealth of the top one percent to median wealth, the differential in rates of return between the two group accounted for a quarter of the increase in the ratio, with differences in other factors such as savings accounting for the other part. It was thus the case that the middle class took a bigger relative hit on their net worth from the decline in home prices than the top one percent did from the stock market plunge. This factor is also reflected in the fact that median wealth dropped much more in percentage terms than mean wealth over the Great Recession. There was a modest rise in wealth inequality from 2010 to 2016. The same decomposition shows that the differential in rates of return between the two group (now in favor of the middle group) should have led to a decline of 22.2 in the ratio of the mean wealth of the top one percent to median wealth, compared to the actual increase of 65.8.

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Table 1: Mean and Median Wealth and Income, 1983-2016
(In thousands, 2016 dollars)

Variable	1983	1989	2001	2007	2010	2013	2016
A. Net Worth							
1. Median	80.4	86.1	99.6	118.6	66.5	65.8	78.1
2. Mean	313.0	358.6	515.2	620.5	521.0	524.1	667.6
3. Percent with zero or negative net worth	15.5	17.9	17.6	18.6	21.8	21.8	21.2
B. Income (CPS)[a]							
1. Median	49.4	55.7	59.1	60.0	56.0	55.2	59.0
2. Mean	60.2	70.7	81.7	81.0	76.8	77.5	83.1

	Annual Growth Rates (percent)							Percentage Change		
	1983-1989	1989-2001	2001-2007	2007-2010	2010-2013	2013-2016	1983-2016	2007-2010	2010-2013	2013-2016
II Annual Growth Rates (percent)										
A. Net Worth										
1. Median	1.13	1.22	2.91	-19.27	-0.39	5.73	-0.09	-43.9	-1.2	18.7
2. Mean	2.27	3.02	3.10	-5.83	0.20	8.07	2.30	-16.0	0.6	27.4
B. Income (CPS)[a]										
1. Median	2.03	0.48	0.26	-2.32	-0.45	2.23	0.54	-6.7	-1.3	6.9
2. Mean	2.66	1.21	-0.14	-1.78	0.29	2.35	0.98	-5.2	0.9	7.3

Source: author's computations from the 1983, 1989, 2001, 2007, 2010, 2013, and 2016 SCF.
Wealth figures are deflated using the Consumer Price Index (CPI-U).
a. Source for household income data: U.S. Census of the Bureau, Current Populations Surveys, available on the Internet.
http://www.census.gov/hhes/www/income/data/historical/household/
The 1962 figures are based on family income and the rate of change of family income between 1962 and 1969.
All figures are re-based to the 2016 CPS figures for mean and median income.

Table 2. The Size Distribution of Wealth and Income, 1962-2016

Year	Gini Coefficient	Percentage Share of Wealth or Income held by: Top 1.0%	Next 4.0%	Next 5.0%	Next 10.0%	Top 20.0%	4th 20.0%	3rd 20.0%	Bottom 40.0%	All
A. Net Worth										
1962	0.803	33.4	21.2	12.4	14.0	81.0	13.4	5.4	0.2	100.0
1969	0.828	35.6	20.7	12.5	13.8	82.5	12.2	5.0	0.3	100.0
1983	0.799	33.8	22.3	12.1	13.1	81.3	12.6	5.2	0.9	100.0
1989	0.828	35.2	22.8	11.9	13.2	83.0	12.0	4.7	0.2	100.0
2001	0.826	33.4	25.8	12.3	12.9	84.4	11.3	3.9	0.3	100.0
2007	0.834	34.6	27.3	11.2	12.0	85.0	10.9	4.0	0.2	100.0
2010	0.866	35.1	27.4	13.8	12.3	88.6	9.5	2.7	-0.8	100.0
2013	0.871	36.7	28.2	12.2	11.8	88.9	9.3	2.7	-0.9	100.0
2016	0.877	39.6	27.1	12.1	11.1	89.9	8.2	2.4	- 0.5	100.0
B. Income										
1962	0.428	8.4	11.4	10.2	16.1	46.0	24.0	16.6	13.4	100.0
1969	0.469	10.4	12.4	10.3	15.9	48.9	23.4	16.4	11.2	100.0
1982	0.480	12.8	13.3	10.3	15.5	51.9	21.6	14.2	12.3	100.0
1988	0.521	16.6	13.3	10.4	15.2	55.6	20.6	13.2	10.7	100.0
2000	0.562	20.0	15.2	10.0	13.5	58.6	19.0	12.3	10.1	100.0
2006	0.574	21.3	15.9	9.9	14.3	61.4	17.8	11.1	9.6	100.0
2009	0.549	17.2	16.5	10.7	14.7	59.1	18.7	14.9	7.3	100.0
2012	0.574	19.8	16.5	10.8	14.7	61.8	17.8	11.1	9.4	100.0
2015	0.598	23.5	16.2	10.2	14.1	64.0	16.8	10.2	9.0	100.0

Source: author's computations from the 1983, 1989, 2001, 2007, 2010, 2013, and 2016 SCF.
Additional sources are the 1962 SFCC and the 1969 MESP file. Income data are from these files.
For the computation of percentile shares of net worth, households are ranked according to their net worth; and for percentile shares of income, households are ranked according to their income.

Table 3. Composition of Total Household Wealth, 1983 - 2016

(Percent of gross assets)

Wealth component	1983	1989	2001	2007	2010	2013	2016
Principal residence	30.1	30.2	28.2	32.8	30.7	28.5	25.1
Other real estate	14.9	14.0	9.8	11.3	11.6	10.2	10.4
Unincorporated business equity	18.8	17.2	17.2	20.1	17.7	18.3	20.1
Liquid assets[a]	17.4	17.5	8.8	6.6	7.7	7.6	6.7
Pension accounts[b]	1.5	2.9	12.3	12.1	15.1	16.5	15.6
Financial securities[c]	4.2	3.4	2.3	1.5	1.8	1.5	1.3
Corporate stock & mutual funds	9.0	6.9	14.8	11.8	11.2	12.7	16.1
Net equity in personal trusts	2.6	3.1	4.8	2.3	2.4	3.2	3.4
Miscellaneous assets[d]	1.3	4.9	1.8	1.7	1.7	1.5	1.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Debt on principal residence	6.3	8.6	9.4	11.4	12.7	11.2	8.6
All other debt[e]	6.8	6.4	3.1	3.9	4.4	4.0	3.9
Total debt	13.1	15.0	12.5	15.3	17.1	15.2	12.5
Selected ratios in percent:							
Debt / net worth ratio	15.1	17.6	14.3	18.1	20.6	17.9	14.3
Debt / income ratio	68.4	87.6	81.1	118.7	127.0	107.1	95.1
Net home equity / total assets	23.8	21.6	18.8	21.4	18.1	17.3	16.5
Principal residence debt as ratio to house value	20.9	28.6	33.4	34.9	41.2	39.3	34.4
Stocks, directly or indirectly owned as a ratio to total assets[f]	11.3	10.2	24.5	16.8	17.5	20.7	22.4

Source: author's computations from the 1983, 1989, 2001, 2007, 2010, 2013, and 2016 SCF.

a. Checking accounts, savings accounts, time deposits, money market funds, certificates of deposits, and the cash surrender value of life insurance.

b. IRAs, Keogh plans, 401(k) plans, the accumulated value of defined contribution pension plans, and other retirement accounts.

c. Corporate bonds, government bonds (including savings bonds), open-market paper, and notes.

d. Gold and other precious metals, royalties, jewelry, antiques, furs, loans to friends and relatives, future contracts, and miscellaneous assets.

e. Mortgage debt on all real property except principal residence; credit card, installment, and other debt.

f. Includes direct ownership of stock shares and indirect ownership through mutual funds, trusts, and IRAs, Keogh plans, 401(k) plans, and other retirement accounts

Table 4. Composition of Household Wealth by Wealth Class, 2016

(Percent of gross assets)

Asset	All Households	Top One Percent	Next 19 Percent	Middle 3 Quintiles
Principal residence	25.1	7.6	25.6	61.9
Liquid assets (bank deposits, money market funds, and cash surrender value of life insurance)	6.7	4.6	7.7	8.5
Pension accounts	15.6	6.0	22.4	16.6
Corporate stock, financial securities, mutual funds, and personal trusts	20.8	31.4	18.6	3.9
Unincorporated business equity other real estate	30.5	49.0	24.5	7.9
Miscellaneous assets	1.3	1.4	1.2	1.2
Total assets	100.0	100.0	100.0	100.0
Memo (selected ratios in percent):				
Debt / net worth ratio	14.3	2.4	10.1	58.9
Debt / income ratio	95.1	35.0	88.9	120.4
Net home equity / total assets[a]	16.5	6.4	18.8	33.3
Principal residence debt / house value	34.4	15.4	26.5	46.1
All stocks / total assets[b]	22.4	25.5	24.5	9.7
Ownership Rates (Percent)				
Principal residence	63.7	94.1	94.6	67.0
Other real estate	17.4	74.7	46.7	11.7
Pension assets	52.1	91.3	83.8	48.9
Unincorporated business	11.4	66.1	28.7	7.8
Corporate stock, financial securities, mutual funds, and personal trusts	22.8	89.2	61.6	15.3
Stocks, directly or indirectly owned[b]	49.3	94.0	86.2	45.0
(1) $5,000 or more	39.3	94.0	84.4	33.9
(2) $10,000 or more	34.9	93.8	82.7	28.3

Source: author's computations from the 2016 SCF. Households are classified into wealth class according to their net worth. Brackets for 2016 are:

Top one percent: Net worth of $10,257,000 or more.
Next 19 percent: Net worth between $471,600 and $10,257,000.
Quintiles 2 through 4: Net worth between $0 and $471,600.

Also, see Notes to Table 5.

a. Ratio of gross value of principal residence less mortgage debt on principal residence to total assets.

b. Includes direct ownership of stock shares and indirect ownership through mutual funds, trusts, and IRAs, Keogh plans, 401(k) plans, and other retirement accounts

Table 5. Composition of Household Wealth of the Middle Three Wealth Quintiles, 1983-2016

(Percent of gross assets)

Asset	1983	1989	1998	2001	2004	2007	2010	2013	2016
Principal residence	61.6	61.7	59.8	59.2	66.1	65.1	64.8	62.5	61.9
Liquid assets (bank deposits, money market funds, and cash surrender value of life insurance)	21.4	18.6	11.8	12.1	8.5	7.8	8.0	8.1	8.5
Pension accounts	1.2	3.8	12.3	12.7	12.0	12.9	13.9	16.1	16.6
Corporate stock, financial securities, mutual funds, and personal trusts	3.1	3.5	5.5	6.2	4.2	3.6	3.1	3.4	3.9
Unincorporated business equity other real estate	11.4	9.4	8.8	8.5	7.9	9.3	8.9	8.6	7.9
Miscellaneous assets	1.3	2.9	1.8	1.2	1.4	1.3	1.3	1.2	1.2
Total assets	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Memo (selected ratios in percent):									
Debt / net worth ratio	37.4	41.7	51.3	46.4	61.6	61.1	69.2	64.0	58.9
Debt / income ratio	66.9	83.0	101.6	100.3	141.2	156.7	134.3	125.0	120.4
Net home equity / total assets[a]	43.8	39.2	33.3	33.8	34.7	34.8	31.4	31.4	33.3
Principal residence debt / house value	28.8	36.5	44.4	42.9	47.6	46.6	51.5	49.8	46.1
All stocks / total assets[b]	2.4	3.3	11.2	12.6	7.5	7.0	8.1	9.5	9.7
Ownership Rates (Percent)									
Principal residence	71.6	71.5	73.3	75.9	78.2	76.9	68.0	66.7	67.0
Other real estate	15.4	15.5	13.7	13.2	13.6	14.7	12.4	12.4	11.7
Pension assets	12.2	27.3	48.5	52.9	51.4	53.4	45.8	44.4	48.9
Unincorporated business	8.5	8.4	8.5	7.9	8.1	8.8	8.2	6.6	7.8
Corporate stock, financial securities, mutual funds, and personal trusts	21.6	24.2	26.7	27.5	27.1	23.1	15.3	14.2	15.3
All stocks[b]	16.5	29.4	46.6	51.1	49.7	47.8	41.4	41.0	45.0
Mean Debt (thousands, 2013$)									
Debt on principal residence	24.2	35.2	34.2	51.2	73.5	78.4	60.2	54.0	53.9
All other debt	12.9	10.8	9.5	12.6	15.6	19.8	13.5	13.7	16.1
Total debt	37.1	46.0	43.7	63.8	89.1	98.1	73.8	67.7	69.9

Source: author's computations from the 1983, 1989, 1992, 1995, 1998, 2001, 2004, 2007, 2010, 2013, and 2016 SCF. Households are classified into wealth class according to their net worth. Also, see Notes to Table 5.

a. Ratio of gross value of principal residence less mortgage debt on principal residence to total assets.
b. Includes direct ownership of stock shares and indirect ownership through mutual funds, trusts, and IRAs, Keogh plans, 401(k) plans, and other retirement accounts

Table 6. Average Annual Rates of Return by Period and Wealth Class, 1983 - 2016
(percentage)

	1983-1989	1989-2001	2001-2007	2007-2010	2010-2013	2013-2016	1983-2016
A. Gross Assets							
1. All Households	2.33	3.33	3.10	-6.38	4.74	5.42	2.54
2. Top 1 Percent	3.07	3.92	3.75	-6.37	5.88	5.62	3.13
3. Next 19 Percent	2.33	3.44	2.88	-6.07	4.68	5.35	2.56
4. Middle 3 Quintiles	1.35	2.32	2.71	-7.07	3.06	5.23	1.69
B. Net Worth							
1. All Households	3.32	4.35	4.04	-7.28	6.08	6.46	3.40
2. Top 1 Percent	3.45	4.19	3.92	-6.52	6.13	5.79	3.35
3. Next 19 Percent	3.00	4.09	3.46	-6.63	5.56	6.05	3.11
4. Middle 3 Quintiles	3.35	4.67	5.58	-10.55	6.59	9.05	3.79
Memo: difference between top 1% and middle quintiles	-0.10	0.48	1.67	-4.04	0.46	3.26	0.43

Source: author's computations from the 1983, 1989, 2001, 2007, 2010, 2013, and 2016 SCF.
Rates of return by asset type are provided in Appendix 1.
Households are classified into wealth class according to their net worth.
Calculations are based on household portfolios averaged over the period for each group.
Miscellaneous assets are excluded from the calculation.

Table 7. Decomposition of Trends in Median and Mean Wealth, the Mean Wealth of the Top Percentile, and the ratio of the Mean Wealth of the Top Percentile to Median Wealth
(Wealth levels in thousands, 2016 dollars)

	1983-1989	1989-2001	2001-2007	2007-2010	2010-2016
A. Mean Net Worth					
1. Actual change in mean net worth	45.6	156.6	105.3	-99.6	146.7
2. Change in mean net worth from return on wealth alone	68.9	245.7	141.3	-121.8	216.2
3. Share of change in mean net worth from return on wealth alone (percent)	151.2	156.9	134.1	122.3	147.4
4. Share of change in mean net worth from other sources	-51.2	-56.9	-34.1	-22.3	-47.4
B. Median Net Worth					
1. Actual change in median net worth	5.7	13.6	19.0	-52.1	11.5
2. Change in median net worth from return on wealth alone	17.9	64.7	39.6	-32.2	35.1
3. Share of change in median net worth from return on wealth alone (percent)	316.8	477.0	208.8	61.8	303.5
4. Share of change in median net worth from other sources	-216.8	-377.0	-108.8	38.2	-203.5
C. Mean Wealth of the Top One Percent					
1. Actual change in mean wealth of the top 1%	2,045	4,591	4,247	(3,330)	8,283
2. Change in mean wealth of the top 1% from return on wealth alone	2,431	8,233	4,559	(3,810)	7,295
3. Share of change in mean wealth of the top 1% from return on wealth alone (percent)	118.9	179.3	107.3	114.4	88.1
4. Share of change in mean wealth of the top 1% from other sources	-18.9	-79.3	-7.3	-14.4	11.9
D. Ratio of the Mean Wealth of the Top One Percent to Median Wealth					
1. Actual change in the ratio	15.1	26.1	8.2	91.5	65.8
2. Change in the ratio from return on wealth alone	0.8	(8.3)	(16.4)	23.3	(22.2)
3. Share of the change in the ratio from return on wealth alone (percent)	5.1	(31.7)	(201.2)	25.4	(33.7)
4. Share of the change in the ratio from other sources (percent)	94.9	131.7	301.2	74.6	133.7

Source: author's computations from the 1983, 1989, 2001, 2007, 2010, 2013, and 2016 SCF.
Rates of return by wealth group are provided in Table 11. I use the rate of return for the middle three wealth quintiles in the decomposition for median wealth.
Households are classified into wealth class according to their net worth.

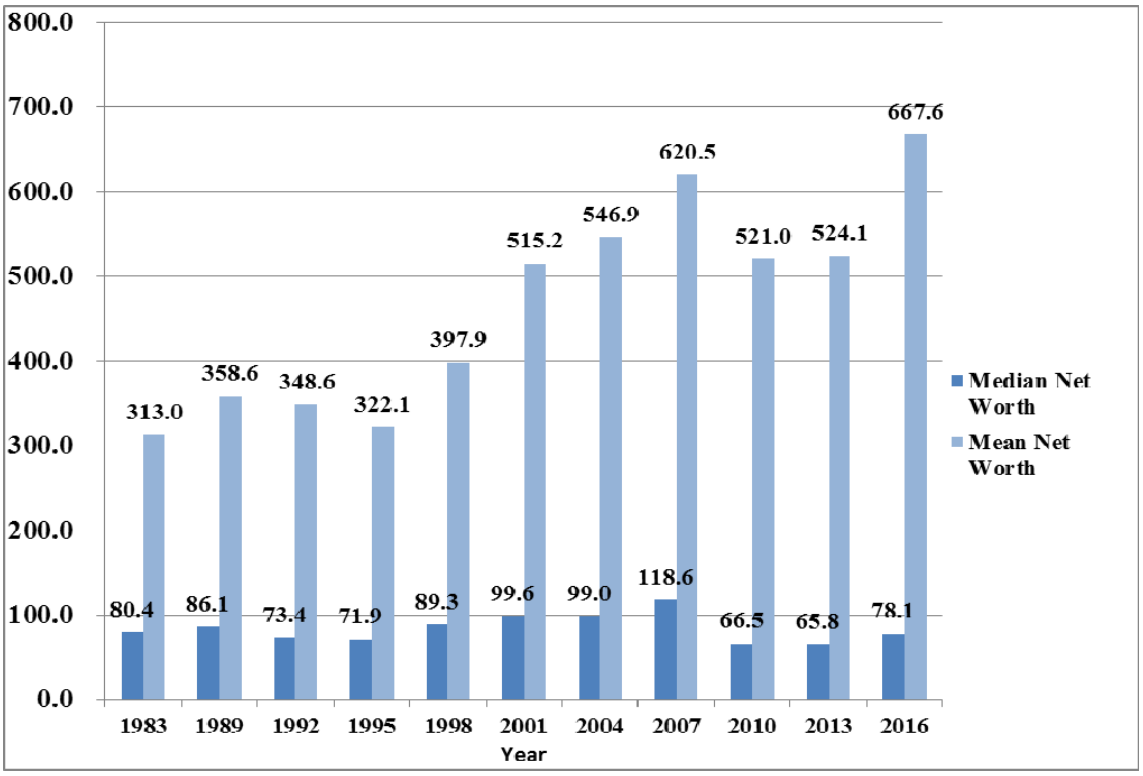

Figure 1. Mean and Median Net Worth, 1983-2016 (in thousands, 2016 dollars)

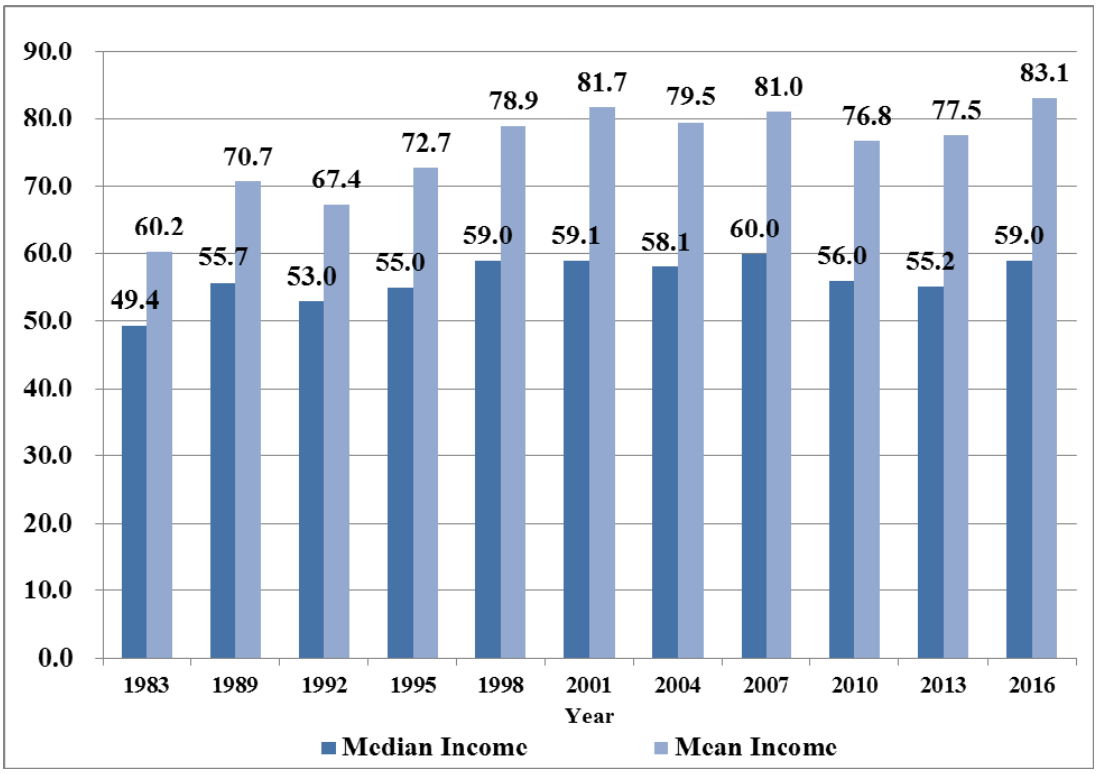

Figure 2. Mean and Median Household Income, 1983-2016 (in thousands, 2016 dollars)

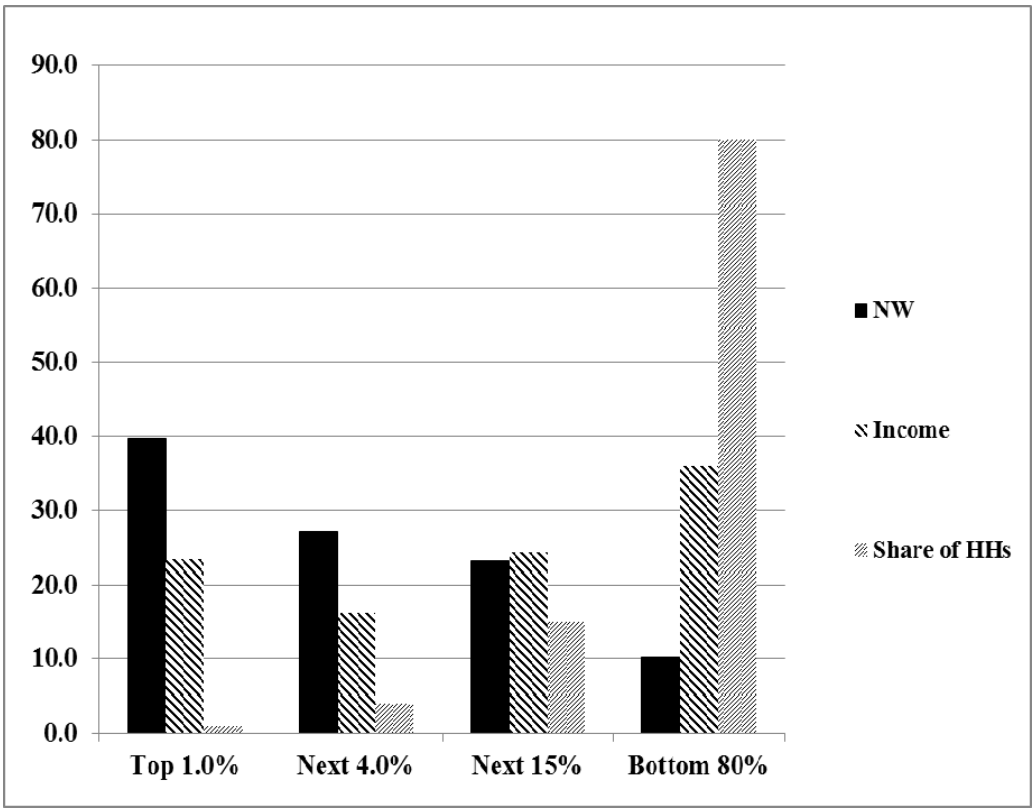

Figure 3 The Size Distribution of Net Worth (NW) and Income, 2016 (Percentage Shares)

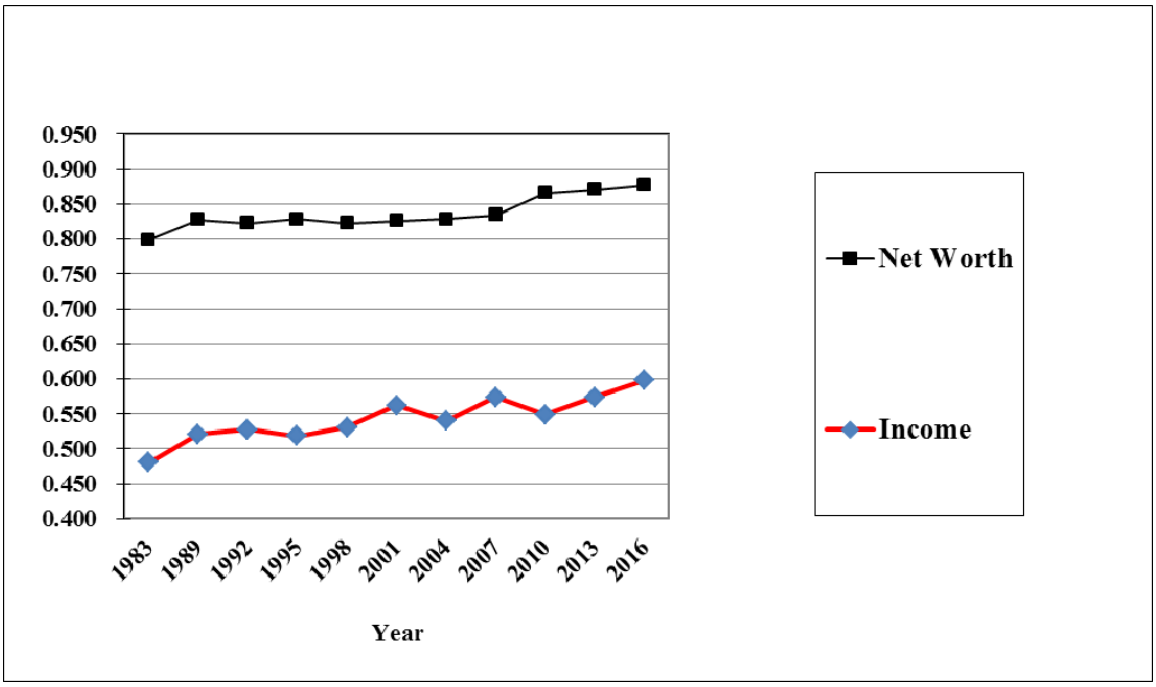

Figure 4 Wealth and Income Inequality, 1962-2016 (Gini coefficients)