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AFRICAN-AMERICAN AND HISPANIC INCOME, WEALTH AND HOMEOWNERSHIP SINCE 1989

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This paper analyzes trends in the income, net worth, and homeownership of non-Hispanic African-Americans and Hispanics relative to non-Hispanic whites in the United States from 1989 to 2016 and the reasons for those trends using data from the Survey of Consumer Finances. The wealth gap between African-American and white families was much the same in 2007 as in 1989 but it lessened considerably for Hispanics. The net worth of both minorities declined sharply relative to that of non-Hispanic whites from 2007 to 2016 and that decline was due largely to the lower rate of return on wealth of these two groups during the 2007–2010 period and largely due to the larger dissaving of these two groups during the 2010–2016 period. The paper also finds that the wealth gap is much smaller if net worth is augmented by pension wealth and especially by Social Security wealth.

JEL Codes: D31, J15

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1. INTRODUCTION

This paper documents changes in the income, homeownership, and particularly net worth of non-Hispanic African-Americans and Hispanics over years 1989–2016 on the basis of the Survey of Consumer Finances (SCF) conducted by the Federal Reserve Board. It analyzes trends in wealth and wealth inequality, with special emphasis on the impact the Great Recession, during one of the sharpest declines in stock and real estate prices, had on household wealth and then determining whether minority wealth recovered afterward as asset prices recovered.

An overview of the components of household wealth is provided, and further analysis is provided by looking at the wealth portfolio by race and ethnicity. Changes in wealth and income for each of these groups are evaluated over time, and the paper unpacks the changes in wealth through the lens of rates of return on assets and net worth. Lastly, a decomposition analysis helps explain what is driving the variation in rates of return over time and by race/ethnicity, connecting changes in wealth to capital revaluation, savings behavior, and other residual factors.

Overall, the paper finds that minority households experienced increases in leverage leading up to the Great Recession, and this fact combined with the

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substantial position the primary residence plays in their household portfolio led to a lower return on net worth than experienced by white households, despite the roughly simultaneous and similar drop in the prices of assets concentrated among the latter. This is reinforced by the decomposition analysis, which reveals that the capital revaluation portion during the recession accounted for a large portion of the decline in minority net worth over this period. This conclusion has important implications for the trajectory of racial wealth inequality, which is shown by tracking median and mean wealth by group, as well as the Gini coefficient. In sum, the paper contributes to the existing literature on racial wealth inequality by documenting trends in household wealth by race/ethnicity with a detailed analysis of the composition of household portfolios, connecting the varying degrees of leverage in these households to the rates of return they receive on their net worth, and estimating the shares of changes in wealth attributable to the rates of return and savings rate.

The principal research questions are then, first, what happened to the relative income, wealth, and homeownership rate of the two minority groups compared to non-Hispanic whites over years 1989 to 2016? Second, with regard to household net worth, what are the key factors accounting for these trends? Third, how did the sharp run-up of stock and housing prices from 1989 to 2007, their collapse from 2007 to 2010, and their recovery from 2010 to 2016 affect the net worth of the three groups? Fourth, how did differences in portfolio composition among the three groups influence their relative wealth holdings? Fifth, what is the role of pension wealth and Social Security wealth in explaining differences in augmented wealth among these groups?

Previous research on explaining the racial/ethnic wealth gap has tended to focus on three topics: (1) the role of differences in demographic characteristics; (2) disparities in homeownership; and (3) differentials in inheritances (see Section 3 for more details). This paper makes an original contribution to the literature in several respects. First, whereas much of the literature compares the labor earnings or family income of minorities to that of non-Hispanic whites, this paper also looks at wealth holdings and homeownership, which are also very important for wellbeing. Second, this paper takes account of Social Security and pension wealth, unlike previous studies, in accounting for differentials in augmented wealth. Third, the paper takes account of differences in portfolio composition among different groups, whereas previous studies focus on differences in demographic characteristics, homeownership, and inheritances. Fourth, the paper focuses on changes in wealth over time, whereas previous studies focus on the level of wealth. Fifth, the paper analyzes more recent data than earlier studies.

The paper finds here that the relative gap in both mean and median income between the two minority groups and non-Hispanic whites declined between 1989 and 2007 and then widened from 2007 to 2016. A similar pattern unfolds for the homeownership rate. In this case, homeownership rates fell in absolute terms for the three groups from 2007 to 2016. The wealth gap between African-American and white families was much the same in 2007 as in 1989 though it lessened considerably between Hispanics and whites over these years. The racial and ethnic disparity in wealth holdings widened considerably in the years between 2007 and 2010.

However, during the recovery period, from 2010 to 2016, the racial wealth gap remained largely unchanged, though the ethnic wealth gap diminished somewhat.

The paper also documents that differences in portfolio composition played a critical role in accounting for trends in relative wealth. The relative indebtedness of minorities exploded from 1989 to 2007, making their finances very fragile in 2007. The high "leverage" of minority households helped to boost their relative wealth holdings from 1989 to 2007 and from 2010 to 2016 when housing and stock prices were rising but led to a massive loss of net worth from 2007 to 2010 when asset prices plunged. In fact, using decomposition analysis, the paper shows that capital revaluation (capital gains or losses on existing wealth holdings) explains much of the trend in the racial/ethnic net worth gap, with savings, wealth transfers, and other factors accounting for the remainder.

When the wealth concept is expanded by adding pension and Social Security wealth to net worth to create augmented wealth AW, the racial and ethnic wealth gaps are substantially reduced. It is also found that while net worth inequality is considerably higher for minorities than whites, the inequality in augmented wealth is considerably lower for minorities.

The rest of the paper is organized as follows. The next section, Section 2, provides some historical background on asset price changes. Section 3 offers a literature review and Section 4 discusses the measurement of household wealth and describes the data sources used for this study. Section 5 presents results on time trends in net worth holdings by race and ethnicity. Section 6 highlights differences in portfolio composition among the three groups and reports on rates of return. It also provides a decomposition analysis of racial and ethnic wealth differences. Section 7 adds pension and Social Security wealth to the household portfolio to create augmented wealth. A summary of results and concluding remarks are provided in Section 8.

2. Historical Background on House and Stock Price Movements

The last two decades have witnessed some remarkable asset price changes. The median house price remained virtually the same in 2001 as in 1989 in real terms.[1] House prices then took off over years 2001 to 2007, gaining 19 percent. Then, the financial crisis hit. The recession officially began in December, 2007, and "officially" ended in June, 2009.[2] Over this period, real GDP fell by 4.3 percent (U.S. Bureau of Economic Analysis, 2020) and the unemployment rate shot up from 4.4 percent in May of 2007 to a peak of 10.0 percent in October of 2009 (U.S. Bureau of Labor Statistics, 2020). One consequence was that asset prices plummeted. From 2007 to 2010, the median home price nose-dived by 24 percent. This was

[1]The source for years 1983 to 2007 is Table 935 of US Bureau of the Census (2008). For years after 2007, the source is: National Association of Realtors (2016). The figures are based on median prices of existing houses for metropolitan areas only. All figures are in constant 2016 dollars unless otherwise indicated.

[2]The source is National Bureau of Economic Research (2020). Here, I use the term "Great Recession" to refer to the period from 2007 through 2010 since household income and wealth collapsed over these years.

followed by a partial recovery, with median house prices rising 7.8 percent through September 2013, though still far below its 2007 value. Home prices then jumped by another 18.4 percent from 2013 to 2016.

In contrast to the housing market, the stock market boomed during the 1990s. On the basis of the Standard & Poor (S&P) 500 index, real stock prices surged 159 percent between 1989 and 2001 (Tables B-55 and B-56 of U.S. Council of Economic Advisers, 2019). It then rose 6 percent from 2001 to 2007. With the start of the Great Recession, stock prices crashed by 26 percent from 2007 to 2010. The stock market rose after 2010 and by 2013 was up 39 percent over 2010 and above its previous high in 2007. Once again, the stock market continued to boom from 2013 to 2016, up by 28 percent.

The housing price bubble in the years leading up to 2007 was fueled in large part by a generous expansion of credit available for home purchases and re-financing. This took a number of forms. First, many home owners re-financed their primary mortgage. However, because of the rise in housing prices, these home owners increased the outstanding mortgage principal and thereby extracted equity from their homes. Second, many took out second mortgages and home equity loans or increased the outstanding balances on these instruments. Third, among new home owners, credit requirements were softened, and so-called "no-doc" loans were issued requiring none or little in the way of income documentation. Many of these loans, in turn, were so-called "sub-prime" mortgages, characterized by excessively high interest rates and "balloon payments" at the expiration of the loan (that is, a non-zero amount due when the term of the loan was up). All told, average mortgage debt per household expanded by 59 percent in real terms between 2001 and 2007 and outstanding mortgage loans as a share of house value rose from 0.334 to 0.349, despite the 19 percent gain in real housing prices (see Appendix S2.1 for a discussion of sources of Great Recession).

What have all these major transformations wrought in terms of the distribution of household wealth by race and ethnicity? This will be addressed in the remainder of the paper.

3. Literature Review

A vast literature in economics has examined the economic progress of African-Americans over the past century. Most of these studies have focused on labor earnings or family income and have sought to assess the extent to which gains that were made relative to whites could be attributed to factors such as declining race discrimination, affirmative action policies, changes in household composition and other demographic characteristics, and a narrowing of the educational gap in educational attainment. Much less is known, however, about how African-Americans have fared in terms of wealth, an important measure of economic well-being that is more informative in many respects than those derived from income flows during a particular year. While a number of studies have examined inequality by race in wealth levels, little attention has been paid to differences by race in patterns of wealth accumulation.

While studies of earnings and income are important for assessing the extent to which labor market discrimination exists and the ability of African-Americans to move closer to whites in terms of acquiring the skills and connections that are currently rewarded by the markets, they provide what is clearly an incomplete picture. It is evident that the economic positions of two families with the same incomes but different wealth levels are not identical. The wealthier family is likely to be better able to provide for the educational and health needs of its children, to live in a neighborhood characterized by more amenities and lower crime, to have greater resources that can be called upon in times of economic hardship, and to have more influence in political life. Bossert and D'Ambrosio (2013) emphasize the role of wealth with regard to economic insecurity, which may make it harder to invest in health and education. As such, wealth may provide a buffer to reduce economic insecurity about the future.

As noted above, previous research on explaining the racial/ethnic wealth gap has tended to focus on three topics: (1) the role of differences in demographic characteristics; (2) disparities in homeownership; and (3) differentials in inheritances. The major contribution here is to focus on differences in portfolio composition between the three groups and on the role of pension wealth and Social Security wealth in explaining differences in augmented wealth.

3.1. *The Role of Income, Demographic Characteristics and Inheritance*

The handful of recent studies on racial differences in wealth have paid little attention to patterns in wealth *accumulation*, focusing instead almost exclusively on trying to explain gaps in wealth *levels*. The former is equally important. Indeed, a comparison of levels misses the crucial role played by differences in portfolio composition, especially relative indebtedness, relative asset price movements, and rates of return in explaining the wealth gap.

The typical approach in comparing wealth levels has been to employ a Blinder-Oaxaca means-coefficient analysis (Blinder, 1973), using regressions estimated separately by race, to calculate how much of the gap can be attributed to differences in characteristics that are associated with wealth accumulation, such as family income and education (Blau and Graham, 1990; Oliver and Shapiro, 1995; Menchik and Jianakoplos, 1997; Conley, 1999). The resulting estimates, however, turn out to vary widely depending on whether coefficients are used from the regression equation estimated for whites or that for African-Americans. That is, because the wealth of whites rises more steeply than that of African-Americans with increases in such characteristics as income and education, the lower mean levels of these characteristics for African-Americans "explain" much more when the coefficients for the whites are used. Altonji and Doraszelski (2005) find this to be true even when long histories are used to construct improved income variables. Barsky *et al*. (2002) demonstrate that the discrepancies are related, in part, to parametric assumptions about the wealth functions.

Pfeffer *et al*. (2013) use the PSID and the SCF to look at wealth disparities leading up to the Great Recession and during the recovery. They find that all socioeconomic groups experienced declines in wealth following the recession, with declines far greater in percentage terms for minorities. McKernan *et al*. (2014b),

using the SCF, also report large losses in wealth over years 2007–2010 and disproportionally greater percentage losses for blacks and Hispanics. McKernan *et al*. (2014a) using data from the PSID find that black families received smaller intergenerational transfers than whites, and this shortfall explained 12 percent of the racial wealth gap.

Maroto (2016) examines factors accounting for racial and ethnic wealth disparities at different points of the wealth distribution and finds that demographic and income differences mattered more for high-wealth households but differential access to credit markets and homeownership were more important among low wealth households. Lerman (2017) investigates changes in differences in family structure between blacks and whites over years 2007 and 2013 and finds that they were too small to play a large role in explaining trends in the racial wealth gap. Elliott *et al*. (2018), using the PSID, find that the returns to wealth between 1989 and 2011 vary substantially over the wealth distribution, with higher returns among those with higher initial net worth. They also find that whites enjoyed higher returns than African-Americans, even after controlling for age, family size and structure, education, and region.

Killewald *et al*. (2017) emphasize the importance of differences in social origins and inheritances in explaining the racial wealth gap. They also point to neighborhood segregation as a factor leading to a disproportionate share of sub-prime mortgages going to the black community in years leading up to the Great Recession and higher home foreclosure rates during the Great Recession. This result is consistent with the findings reported below in this paper that the homeownership rate plummeted more for African-Americans than whites over these years. They conclude that institutional discrimination and residential segregation causally contributed to the wealth gap. Thompson and Suarez (2019), using the SCF from 1989 to 2016, examine the role of human capital, demographics, family financial support, housing characteristics, and inheritance in explaining differences in racial wealth levels. They find that differences in observables explain almost the full wealth gap (89 percent) between black and white families.

3.2. *The Role of Portfolio Differences and Rates of Return*

Keister (2000) looks at the role of racial differences in asset ownership in accounting for the racial wealth gap. Using the 1983–1986 panel of the SCF, she finds that whites were more likely than blacks to buy high-risk, high-return assets and that their wealth was, therefore, likely to increase faster than that of blacks. This paper also reports that whites had a much higher share of their assets invested in financial assets than black families. The results of her simulation model indicate that when racial differences in asset ownership are removed, racial inequalities in wealth ownership declined considerably over years 1962 to 1995.

The fact that the fraction of the racial gap in income or wealth depends on which set of coefficients is used is less than satisfying, however, as a more complete understanding of the forces behind the racial wealth gap as well the efficacy of various public policies designed to narrow it hinge on what causes the wealth functions to differ so much by race in the first place. That is, do white families have higher levels of wealth than African-American families at comparable age

levels because they have received a greater inheritance, because they devote larger amounts of income to savings, or because they earn higher rates of returns on assets? Unfortunately, with data on family wealth for only one point in time, it is difficult to do more than speculate as to which of these three categories holds the key to racial wealth inequality.

Gittleman and Wolff (2004), in contrast, examine wealth changes over time—in particular, 1984–1994—showing how African-Americans and whites differ in terms of the main components of wealth growth: savings, capital gains and inheritances. Making use of panel data from the PSID, they find, as expected, that inheritances raise the rate of wealth accumulation of whites relative to that of African-Americans. But, while whites devote a greater share of their income to savings, racial differences in savings rates are not significant, once income is controlled for. They also do not find evidence that the rate of return to capital is greater for whites than for African-Americans, at least for this period. In this paper, in contrast, it is found that the rate of return on net worth was substantially higher for African-Americans than whites over years 1989–2007 and 2010–2016 but considerably lower over 2007–2010.

Why might patterns of wealth accumulation differ by race? Most obvious is that racial wealth gaps in the past imply that younger generations of black families will inherit from their parents smaller amounts than their white counterparts (Menchik and Jianakoplos, 1997; Williams, 2017). The rate of return to capital may vary by race because of a combination of differences in portfolio composition and differences in the rate of return to specific assets. African-Americans may face barriers to the acquisition of homes and business because of discrimination in mortgage and small business credit markets, limited access to information about investment opportunities and other factors (Munnell *et al*., 1996; Blanchflower *et al*., 1998). Moreover, if children's asset allocations are influenced by those of their parents, the historically lower likelihood of African-Americans to hold such financial assets as stocks and transaction accounts will persist over time (Chiteji and Stafford, 1999).

Though the substantial differences by race in asset allocation that are documented below are well known, the evidence on rate of return by asset type is rather scanty. A partial exception is the housing market, where earlier research, summarized by Blau and Graham (1990), concludes that homes in African-American neighborhoods appreciated at a lower rate than those in predominantly white areas. However, in an examination of mean housing prices by race using the decennial Censuses for 1960 to 1990, Denton (2001) finds that the ratio of the value of African-American to white homes, while still well below unity, reached its highest level in 1990.

Blau and Graham (1990) conclude on the basis of a simulation that differences in rates of return could not account for much of the racial difference in wealth levels in their sample. Though their analysis was not based on actual rates of return, Menchik and Jianakoplos (1997) calculated a specific rate of return for each household on the basis of the actual portfolio composition of each household and conclude that racial differences in rates of return were not important in explaining racial differences in wealth levels. Here the opposite conclusion is reached that differences in returns explain a substantial fraction of the racial gap in

wealth *accumulation* over time. Williams (2017, Chapter 3), moreover, in a review of the pertinent literature concludes that white households enjoy higher returns on assets than black ones. This is also the case in the findings reported in this paper for *gross asse*ts, though as indicated above returns on *net worth* were generally higher for blacks than for whites.

3.3. *Hispanic Wealth*

There are a smaller number of papers that look at the wealth of Hispanic households. Campbell and Kaufman (2006) use the 1992 Survey of Income and Program Participation to analyze wealth differences between white, Mexican-American, and other Hispanic households. They first analyze the wealth gaps after controlling for geographic location, household structure, citizenship, life-cycle stage, and socio-economic status and find that Mexican-American and other Hispanic households have significantly less wealth than white households even in the presence of controls. Thompson and Suarez (2019), in the study noted above, conclude that differences in observables explain the full wealth gap between Hispanic and white families.

3.4. *Retirement Wealth*

There are a limited number of studies that have investigated the racial and ethnic wealth gap with the inclusion of pension and Social Security wealth. As will be defined more formally in the next section, defined benefit pension wealth (DBW) is the present value of future benefits from defined benefit plans. Likewise, Social Security wealth (SSW) is the present value of future benefits from the Social Security system. Perhaps, the earliest study on this subject is Wolff (2011), who found that the addition of DBW and SSW to the household portfolio reduced the measured wealth gap between minorities and whites. That is to say, the ratio of augmented wealth (the sum of net worth, pension wealth, and Social Security wealth) between the two groups is higher than the ratio of net worth. Moreover, the degree to which the addition of DBW and SSW to standard net worth lowered the wealth gap increased over years 1989 to 2007 (the analysis ended in 2007). The principal effect came from the addition of SSW. However, in this analysis, African-Americans and Hispanics were grouped into a single category. Here, separate estimates are presented for the two groups and the results are updated to 2016.

3.5. *Overall Assessment*

What are the key predictors behind the racial and ethnic wealth gap? Using the results of Thompson and Suarez (2019) as a guide, it appears that about 40 percent of both the racial and ethnic net worth gap (excluding pension and Social Security wealth) is explained by differences in human capital and income, about a quarter by demographic differences, about 10 percent by housing status differences, and 20 percent by disparities in inheritances and other financial support. If, in fact, this set of factors explains the full (or almost) full difference in wealth levels between whites and minorities, how can portfolio differences play a role? There are two reasons. The first is that this study, as well as most of the others cited

above, are attempting to explain gaps in wealth *levels*, whereas the focus here is on differences in wealth *growth* over time. As a result, the results reported below are not inconsistent with this set of results. Second, and more fundamentally, disparities in demographics and these other factors translate into differences in portfolio composition, which are the proximate or underlying reason why demographic and other variation is important in explaining the wealth gap. Indeed, by themselves demographic differences do not help "explain" the wealth gap.

As will be demonstrated in Section 6.3 below, income, the savings rate, the rate of return, and net wealth transfers fully explain the *change* in wealth over time. Demography and other factors like human capital come into play by accounting for these four variables. It is possible to directly control for income and net wealth transfers. Differences in demographic and human capital factors then translate into portfolio differences, especially relative indebtedness, which in turn help determine the rate of return on household wealth. For example, younger families (of all races) have a much higher share of their wealth in homes and have a much higher level of indebtedness than older families. In fact, there is an almost steady rise of the share of homes in total assets with age and a decline in relative indebtedness. Correspondingly, financial assets and businesses make up a much larger share of the portfolio of older households than younger ones.

Likewise, there are stark differences in portfolio composition by educational level, with college graduates having a much smaller share of their assets invested in homes and a lower relative indebtedness than less educated households. Also, married couples have a lower concentration of their assets in homes and lower indebtedness than singles. Demographic and human capital differences also translate into a divergence in savings rates, with older, better educated, and married households having higher savings rates than younger, less educated, and single households. As a result, after controlling for income, savings rates, and rates of return, it would be redundant to also control for demographic and human capital variation.[3]

4. Data Sources and Methods

The primary data sources used for this study are the 1989, 1992, 1995, 1998, 2001, 2004, 2007, 2010, 2013, and 2016 SCF. The SCF is a triennial survey starting in 1989.[4] Each survey consists of a core representative sample combined with a high-income supplement. The first sample is selected from a standard multi-stage area-probability design. It is intended to provide good coverage of asset characteristics such as home ownership that are broadly distributed. The second sample, the high income supplement, is selected as a so-called "list sample" from the Individual Tax File) derived from tax data by the Statistics of Income (SOI) Division of the Internal Revenue Service. In this case, the IRS provides the names and addresses of a sample of very high income families. This second sample is designed to

[3]In the subsequent analysis in Section 6.3, it might seem useful to calculate rates of return by demographic and human capital characteristics within race/ethnicity categories. However, the sample sizes for the two minority groups are too small to permit reliable estimates by these combined characteristics.

[4]The SCF was also conducted in 1983 but the methodology differs from the later years so I exclude it here.

disproportionately select families that are likely to be wealthy. Typically, about two thirds of the cases come from the representative sample and one third from the high-income supplement.

The principal wealth concept used here is marketable wealth (or net worth), which is defined as the current value of all marketable or fungible assets less the current value of debts. Net worth is thus the difference in value between total assets and total liabilities. Total assets are defined as the sum of: (1) owner-occupied housing; (2) other real estate; (3) bank deposits, certificates of deposit, money market accounts, and the cash surrender value of life insurance (collectively, "liquid assets"); (4) financial securities; (5) defined contribution pension plans, such as IRAs and 401(k) plans; (6) corporate stock and mutual funds; (7) unincorporated businesses; and (8) trust funds. Total liabilities are the sum of: (1) mortgage debt, (2) consumer debt and (3) other debt such as educational loans.

This measure reflects wealth as a store of value and, therefore, a source of potential consumption. This concept seems to best reflect 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. Though the SCF includes information on the value of vehicles owned by the household, this component is excluded here from the standard definition of household wealth, since their resale value typically far understates the value of their consumption services to the household.[5] Another justification for their exclusion is that this treatment is consistent with the national accounts, where purchase of vehicles (and other consumer durables) is counted as expenditures, not savings. A further rationale is that for most people the concept of wealth as a store of potential consumption means that one should exclude assets whose possession is required in order to enable consumption or to earn income—for example, cars which are needed to purchase groceries or go to work. Also excluded here is the value of future Social Security benefits the family may receive upon retirement ("Social Security wealth"), as well as the value of retirement benefits from defined benefit pension plans ("DB 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. However, these two components are included later in "augmented wealth."

It should be noted that by design the SCF purposely excludes the so-called "Forbes 400"—a list compiled by *Forbes Magazine* of the 400 richest Americans. In 2016, the combined wealth of the Forbes 400 is estimated to be 2.4 trillion dollars.[6] The estimate here of total household wealth in that year for all households is 84.1 trillion dollars. Thus, 2.86 percent of total wealth is excluded from the SCF. How does the exclusion of the Forbes 400 affect the estimated racial wealth ratio? The Forbes 400 cut-off point that year was 1.7 billion dollars. According to Wikipedia, there were five African-Americans with a net worth exceeding one

[5]As a result, my estimates of household wealth will *differ* from those provided by the Federal Reserve Board, which includes the value of vehicles in their wealth definition (see, for example, Kennickell and Woodburn, 1999).

[6]The source is: https://en.wikipedia.org/wiki/List_of_Americans_by_net_worth.

billion dollars: Robert Smith, David Steward, Oprah Winfrey, Michael Jordan, and Jay-Z.[7] Their combined wealth was 13.4 billion dollars. Thus, the black-white mean wealth ratio would fall from 0.144 to 0.139 if the Forbes 400 were included in the sample—a rather trivial change.

4.1. *Decomposition Analysis*

What are the factors that affect both movements in mean wealth and those of wealth differences between groups? In order to analyze these trends, the paper conducts a decomposition analysis of the change in household wealth into a savings, capital gains, and net wealth transfer components. The analysis begins with the basic identity:

$$\Delta W_T \equiv W_t - W_{t-1} = r_T W_T + s_T Y_T + G_T. \tag{1}$$

where W_t = mean net worth (in constant dollars) at time t, ΔW_T is the change in mean wealth over period T from year $t-1$ to t, W_T is average wealth over period T, r_T = average real rate of return on wealth over period T, Y_T = average household income net of capital gains and property income (in constant dollars) over period T,[8] s = average savings rate out of income Y_T over period T, and G_T = average net inheritances and gifts (in constant dollars) over period T.[9] With regard to variable G, the SCF contains questions on (*inter-vivos)* gifts and inheritances received as well as gifts given to others and donations made to charitable organizations.[10]

On the basis of Equation (1), the change in mean wealth over a period can be decomposed into capital revaluation (existing wealth multiplied by the rate of return) and a residual consisting of savings and net wealth transfers. The capital revaluation term or, simply, the revaluation term can be directly estimated in the data and is of primary interest here. The savings component cannot be directly identified, while net wealth transfers are quite small, so that both are included in the residual. The analysis is divided into four periods: 1989–2001, 2001–2007, 2007–2010, and 2010–2016.

It is of note that the paper considers wealth *change* rather than the wealth *level* in the decomposition analysis. The reason is that a primary focus of the paper is on the role of portfolio differences in explaining wealth differences between groups. This effect can be analyzed only by looking at wealth change over time. This is evident from equation (1) in which the change in mean wealth over a period can be decomposed into a capital revaluation term (existing wealth multiplied by the rate

[7]The source is: https://www.google.com/search?rlz=1C1GGRV_enFR753FR766&ei=dsagXc72GOuAjLsPu9-lkAM&q=african+american+forbes+list&oq=African+American+Forbe&gs_l=psy-ab.1.0.0j0i22i30l5.3354.14920..17384…0.1..0.163.3028.1j22….2..0….1..gws-wiz…..0..0i71j0i67.vvpQA-9dXXc

[8]Though the standard SCF income measure includes realized capital gains, this component as well as property income, is excluded here since it is already captured in the term $r_T W_T$.

[9]There are alternative transformations of net worth, such as the IHS transformation or percentile rank, which may be preferable for examining such a skewed variable like net worth with a considerable number of zero and negative values. In the case of the former, IHS (W) = ln (W + sqrt (W^2 + 1)). Unfortunately, the IHS transformation does not lend itself to a straightforward decomposition of the *change* in wealth into a rate of return, saving, and net inheritance terms. The same is true for percentile rank as well.

[10]Wealth transfers are not necessarily intergenerational. According to Wolff (2015), about 20 percent flow from siblings, aunts, uncles, other non-parental relatives, and friends.

of return) and a residual. The portfolio effect is captured in the rate of return r_T. It is also of note that a decomposition of the (current) wealth level would not enable us to pick up the effect of capital revaluation and hence portfolio composition. As discussed in Section 3, Blau and Graham (1990), Gittleman and Wolff (2004), Menchik and Jianakoplos (1997) found very little effect from portfolio differences on the racial wealth gap. The results in this paper are quite different.

The inequality analysis is based on the *ratio* of mean wealth between minorities and whites. It can then be determined what portion of the change in this ratio is due to capital revaluation and what portion to the residual. It should be noted that race/ethnicity remains constant over the lifetime for an individual but since this category is based on the household head, changes in marital status may affect the classification of a household over time.

There are several methodological issues that should be first addressed. With regard to changes in *aggregate* household wealth from time $t-1$ to t, if this were a closed system, then the only sources of change of aggregate wealth would be from savings and capital appreciation. However, "leakages" and additions may occur for several reasons. First, a household could make a charitable contribution. Second, a person could die and pay estate taxes and/or leave a charitable bequest. Third, an American resident could emigrate and take wealth out of the U.S. Fourth, immigrants could bring new wealth in. However, if these effects are small, then changes in aggregate wealth will be due mainly to savings and capital gains.

With regard to changes in *mean household* wealth, the death of a person living alone will reduce the household count (the death of a married spouse, moreover, will not affect the count.) New households may also form over time. If a married couple gets divorced, the household count would increase by one. If two individuals living on their own get married, the household count would go down by one. If two individuals living with parents wed, this will increase the household count by one. Likewise, a single leaving a parental home to form a new household will increase the household count by one.

4.2. *Adding Pension and Social Security Wealth*

The next stage of the analysis adds in defined benefit pension wealth (DBW) and Social Security wealth (SSW) to the household portfolio. How does the inclusion of these two components affect the estimated racial/ethnic wealth gap and its trend over time? How does it affect inequality movements? The SCF gives detailed information on expected pension and Social Security benefits for both husband and wife. The imputation of DBW and SSW involves a large number of steps that are summarized in Appendix S1. As with the concept of household net worth, there are alternative formulations of both DBW and SSW and none is necessarily the "correct" measure. The paper uses the standard gross measure since it is the conventional formulation. It should also be noted that this definition of DBW and SSW is based on the conventional "on-going concern" treatment where it is assumed that employees continue to work at their place of employment until their expected date of retirement.

"Non-pension wealth" NWX is defined as marketable household wealth (NW) minus defined contribution wealth (DCW):

$$NWX = NW - DCW. \tag{2}$$

Total pension wealth, PW, is given by:

$$PW = DCW + DBW. \tag{3}$$

Private augmented wealth PAW is then defined as:

$$PAW = NWX + PW. \tag{4}$$

The term "private augmented wealth" is used to distinguish contributions from private savings and employment contracts with private and government employers from those of Social Security. Retirement wealth is defined as the sum of pension and Social Security wealth:

$$RW = PW + SSW \tag{5}$$

and augmented household wealth, AW, is given by

$$AW = NWX + PW + SSW. \tag{6}$$

5. The Racial Divide Widens Over the Great Recession

5.1. *Trends from 1989 to 2007*

This section begins with descriptive statistics. The time series is broken up into two periods—1989–2007 and 2007–2016—since there is a sharp break in time trends in 2007. Moreover, the paper focuses on years 1989, the first data point; 2001 and 2007, peak (or near-peak) years of the business cycle; 2010, the end of the Great Recession; and 2016, the last year of the recovery period. Households are divided into three groups: (i) non-Hispanic whites, (ii) non-Hispanic African-Americans, and (iii) Hispanics.[11]

In 2006, the ratio of mean income between non-Hispanic white ("white") and non-Hispanic African-American ("black") households was 0.48 and that of median income was 0.60 (see Figures 1–4 and Appendix Table S1, Panels A and B).[12] The wealth gaps were much greater, with a ratio of mean net worth (NW) in 2007 of 0.19 and that of median NW of 0.06, with black median wealth at a mere $10,700 (see Figures 5–8 and Appendix Table S1, Panels C and D).[13] The homeownership rate for black households was 48.6 percent, a little less than two thirds that among

[11]The residual group, American Indians and Asians, is excluded here because of its small sample size.

[12]For a given wealth survey year like 2007, income is reported for the previous year—in this case, 2006.

[13]It should be noted that the unit of observation is the household, which includes both families and single adults. The higher share of female-headed households among African-Americans than among whites. partly accounts for the relatively lower income and wealth among African-American households.

A. Mean Income

	1989	1992	1995	1998	2001	2004	2007	2010	2013	2016
Whites	82.2	81.7	75.0	85.2	102.8	98.9	106.9	95.6	102.9	117.8
Blacks	36.6	40.9	36.2	41.9	49.8	48.4	51.6	45.6	42.8	53.9
Hispanics	37.5	38.6	48.6	45.8	51.0	48.8	53.7	54.0	46.1	57.0

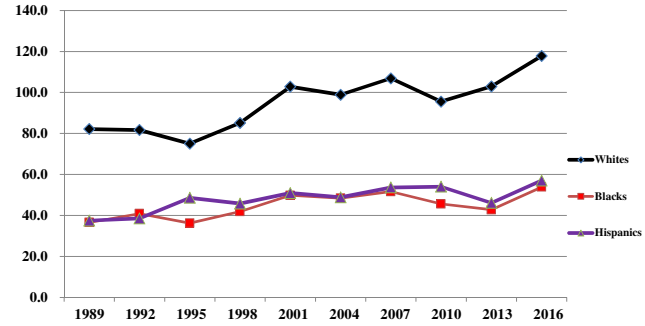

Figure 1. Mean Income by Race and Ethnicity, 1989–2016 (1000s, 2016$)
[Colour figure can be viewed at wileyonlinelibrary.com]

A2. Mean Income: Ratio

	1989	1992	1995	1998	2001	2004	2007	2010	2013	2016
Blacks/Whites	0.45	0.50	0.48	0.49	0.48	0.49	0.48	0.48	0.42	0.46
Hispanics/Whites	0.46	0.47	0.65	0.54	0.50	0.49	0.50	0.57	0.45	0.48

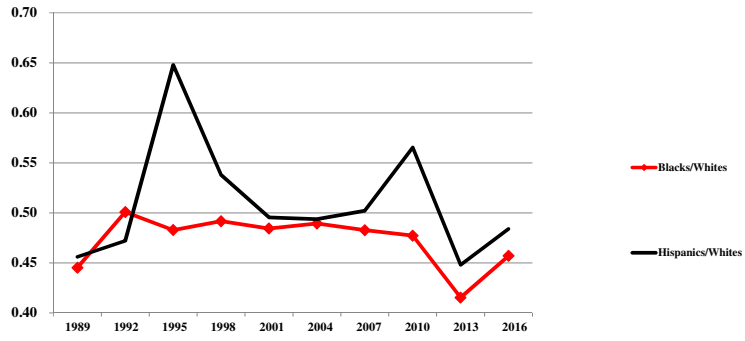

Figure 2. Ratio of Mean Income by Race and Ethnicity, 1989–2016
[Colour figure can be viewed at wileyonlinelibrary.com]

whites, and the percentage of black households with zero or negative net worth stood at 33.4, more than double that among whites (see Figures 9–11 and Appendix Table S1, Panels E and F). The Gini coefficient for NW was considerably higher among blacks than among whites (see Figure 12 and Appendix Table S1, Panel G).

NW increased more for African-Americans than whites from 1989 to 2007 and the NW ratio went up. The homeownership rate among black households also grew and rose relative to whites. The share of black households reporting zero or negative NW was considerably lower in 2007 than in 1989 and fell relative to white households. Wealth inequality was uniformly higher among African-Americans—a reflection of the larger share with non-positive wealth. While there was an upturn in the Gini coefficient among whites, it dipped among black households.

B. Median Income

	1989	1992	1995	1998	2001	2004	2007	2010	2013	2016
Whites	54.7	50.3	50.4	54.5	59.6	61.0	57.9	56.1	55.6	60.0
Blacks	20.8	28.5	26.8	29.4	33.9	35.6	34.7	33.0	30.9	35.0
Hispanics	26.2	26.8	34.6	33.9	32.5	33.0	40.5	37.4	33.0	39.0

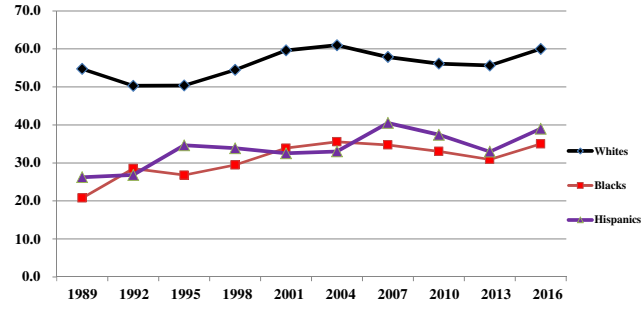

Figure 3. Median Income by Race and Ethnicity, 1989–2016 (1000s, 2016$)
[Colour figure can be viewed at wileyonlinelibrary.com]

B2. Median Income: Ratio

	1989	1992	1995	1998	2001	2004	2007	2010	2013	2016
Blacks/Whites	0.38	0.57	0.53	0.54	0.57	0.58	0.60	0.59	0.56	0.58
Hispanics/Whites	0.48	0.53	0.69	0.62	0.55	0.54	0.70	0.67	0.59	0.65

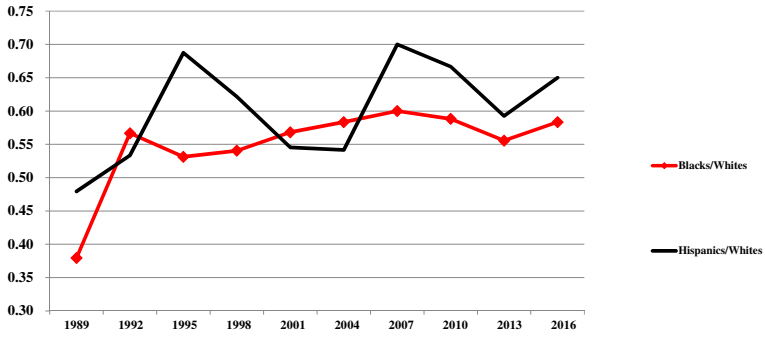

Figure 4. Ratio of Median Income by Race and Ethnicity, 1989–2016
[Colour figure can be viewed at wileyonlinelibrary.com]

The ratio of mean income between Hispanics and (non-Hispanic) whites in 2006 was almost the same as the racial gap but the ratio of median income was higher than the black-white ratio. Once, again, the wealth gap was much greater than the income gap. The ratio of mean NW was 0.26 in 2007 compared to a black-white ratio of 0.19 but the ratio of medians was about the same as the racial ratio. Median Hispanic wealth was also very low, $10,500. The Hispanic homeownership rate was almost identical to that of African-Americans, and about the same percentage of Hispanic households reported zero or negative wealth as did African-Americans.

Progress among Hispanic households over the period from 1989 to 2007 was generally a positive story. Mean and median household income grew more than among whites. Mean Hispanic wealth surged so that the Hispanic-white NW ratio

C. Mean Net Worth

	1989	1992	1995	1998	2001	2004	2007	2010	2013	2016
Whites	432.8	418.8	381.7	472.5	631.3	678.4	754.9	666.0	676.1	875.6
Blacks	72.5	77.8	64.2	85.8	89.9	128.9	142.0	95.6	87.0	126.3
Hispanics	71.2	93.1	80.8	116.6	108.6	145.4	197.2	102.4	101.2	165.8

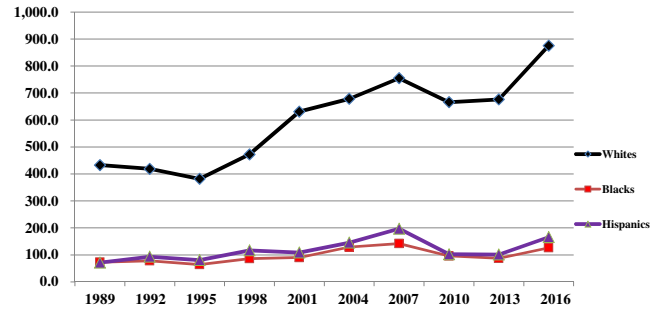

Figure 5. Mean Net Worth by Race and Ethnicity, 1989–2016 (1000s, 2016$)
[Colour figure can be viewed at wileyonlinelibrary.com]

C2. Mean NW: Ratio

	1989	1992	1995	1998	2001	2004	2007	2010	2013	2016
Blacks/Whites	0.17	0.19	0.17	0.18	0.14	0.19	0.19	0.14	0.13	0.14
Hispanics/Whites	0.16	0.22	0.21	0.25	0.17	0.21	0.26	0.15	0.15	0.19

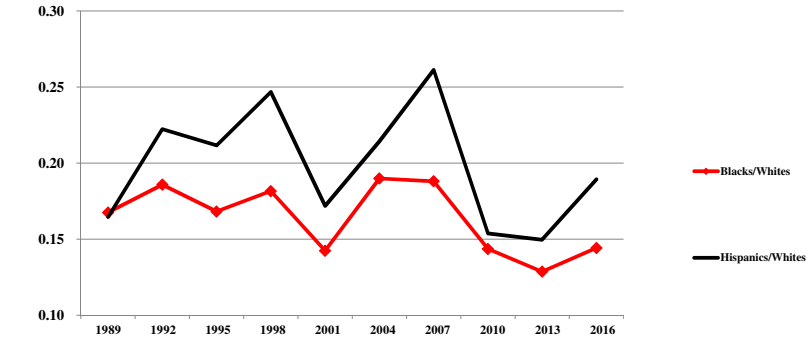

Figure 6. Ratio of Mean Net Worth by Race and Ethnicity, 1989–2016
[Colour figure can be viewed at wileyonlinelibrary.com]

expanded from 0.16 to 0.26, quite a bit higher than the racial ratio. The upturn in Hispanic wealth can be traced to an enormous (9.4 percentage point) jump in the Hispanic homeownership rate. Moreover, the ratio of homeownership rates between Hispanics and whites swelled from 0.57 to 0.66. Median wealth among Hispanics more than tripled, as did the ethnic ratio.

The share of Hispanic households with zero or negative net worth fell rather steadily, as did the ratio relative to whites. Wealth inequality was also uniformly higher among Hispanics than among whites over these years. This difference once again largely reflects the higher share with non-positive wealth. While there was a moderate increase in the Gini coefficient among whites, there was actually a decline among Hispanics over these years. The time trend among Hispanics reflects, in

D. Median Net Worth

	1989	1992	1995	1998	2001	2004	2007	2010	2013	2016
Whites	125.1	104.9	96.1	120.3	144.2	150.3	166.3	113.8	120.3	140.5
Blacks	3.2	17.7	11.6	14.7	14.4	15.0	10.7	6.9	1.7	3.4
Hispanics	2.6	6.3	7.9	4.4	4.0	7.0	10.5	3.0	2.0	6.3

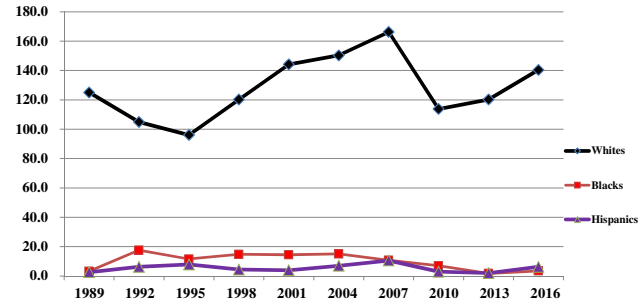

Figure 7. Median Net Worth by Race and Ethnicity, 1989–2016 (1000s, 2016$)
[Colour figure can be viewed at wileyonlinelibrary.com]

D2. Median NW: Ratio

	1989	1992	1995	1998	2001	2004	2007	2010	2013	2016
Blacks/Whites	0.03	0.17	0.12	0.12	0.10	0.10	0.06	0.06	0.01	0.02
Hispanics/Whites	0.02	0.06	0.08	0.04	0.03	0.05	0.06	0.03	0.02	0.04

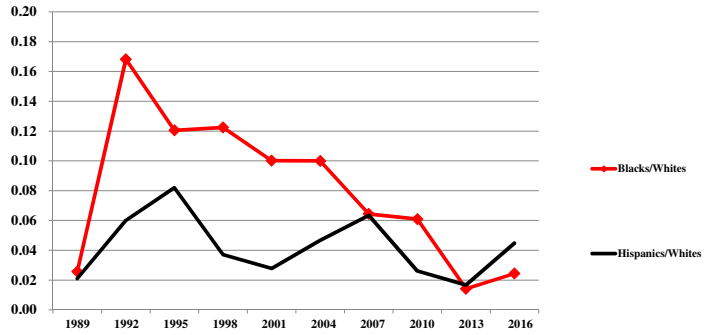

Figure 8. Ratio of Median Net Worth by Race and Ethnicity, 1989–2016
[Colour figure can be viewed at wileyonlinelibrary.com]

part, the successive waves of new Latino immigrants arriving in the U.S. over these years with little or no net worth.[14]

5.2. *Trends from 2007 to 2016*

The racial/ethnic wealth picture changed radically over the Great Recession. While the ratio of both mean and median income between black and white households changed very little between 2007 and 2010 (mean income, in particular, declined for both groups), the ratio of mean NW dropped from 0.19 to 0.14 (see

[14]Technically, "Latinos" refer to people of Latin American descent, while "Hispanics" refer to Spanish-speaking persons, especially those of Latin American descent. The official SCF category is "Hispanics."

G. Homeownership rate (%)

	1989	1992	1995	1998	2001	2004	2007	2010	2013	2016
Whites	69.3	69.0	69.4	71.8	74.1	75.8	74.8	74.6	73.1	71.9
Blacks	41.7	48.5	46.8	46.3	47.4	50.1	48.6	47.7	44.0	44.0
Hispanics	39.8	43.1	44.4	44.2	44.3	47.7	49.2	47.3	43.9	45.4

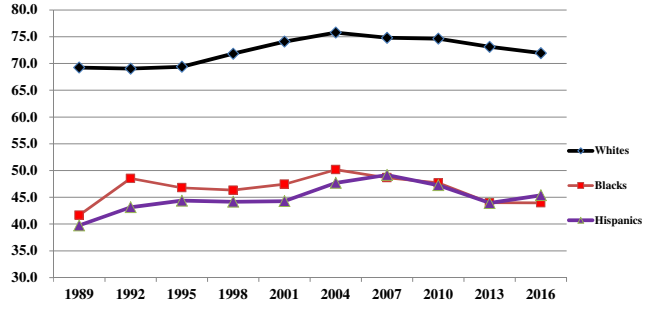

Figure 9. Homeownership Rate by Race and Ethnicity, 1989–2016 (percentage)
[Colour figure can be viewed at wileyonlinelibrary.com]

G. Homeownership rate (%): Ratio

	1989	1992	1995	1998	2001	2004	2007	2010	2013	2016
Blacks/Whites	0.60	0.70	0.67	0.64	0.64	0.66	0.65	0.64	0.60	0.61
Hispanics/Whites	0.57	0.62	0.64	0.61	0.60	0.63	0.66	0.63	0.60	0.63

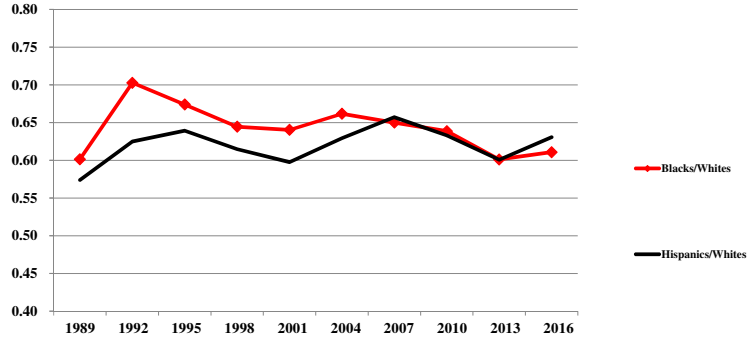

Figure 10. Ratio of Homeownership Rates by Race and Ethnicity, 1989–2016
[Colour figure can be viewed at wileyonlinelibrary.com]

Figures 1–6 and Appendix Table S1, Panels A, B, and C). These results are similar to those reported by Pfeffer *et al.* (2013) and McKernan *et al.* (2014). The proximate causes were the higher leverage (relative indebtedness) of black households and their higher share of housing wealth in gross assets (see Table 1). In 2007, the debt-NW ratio among African-Americans was an astounding 0.553, compared to 0.154 among whites, while housing as a share of gross assets was 54.0 percent for the former as against 30.8 percent for the latter. The sharp drop in home prices from 2007 to 2010 led to a relatively steeper loss in home equity for black homeowners than for white homeowners, and this factor, in turn, led to a greater fall in mean NW for black than white households. The annual real rate of return on the

H. Percentage with zero or negative net worth

	1989	1992	1995	1998	2001	2004	2007	2010	2013	2016
Whites	12.1	13.8	15.0	14.8	13.1	13.0	14.5	17.9	16.3	15.5
Blacks	40.7	31.5	31.3	27.4	30.9	29.4	33.4	32.9	40.0	37.0
Hispanics	39.9	41.2	38.3	36.2	35.3	31.3	33.5	34.6	33.9	32.8

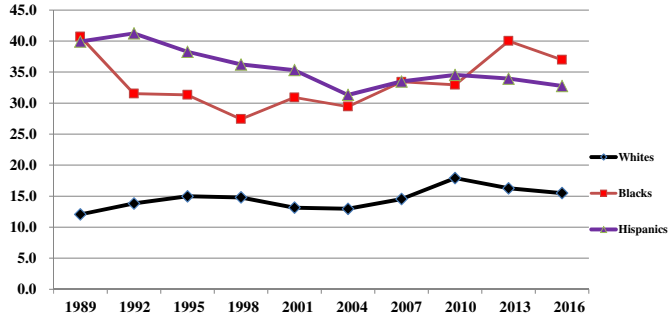

Figure 11. Percentage of Households with Zero or Negative Net Worth by Race and Ethnicity, 1989–2016
[Colour figure can be viewed at wileyonlinelibrary.com]

I. Gini coeffs

	1989	2001	2007	2010	2013	2016
Whites	0.781	0.803	0.818	0.844	0.843	0.852
Blacks	0.868	0.855	0.848	0.948	1.010	0.972
Hispanics	0.917	0.894	0.880	0.960	0.967	0.945

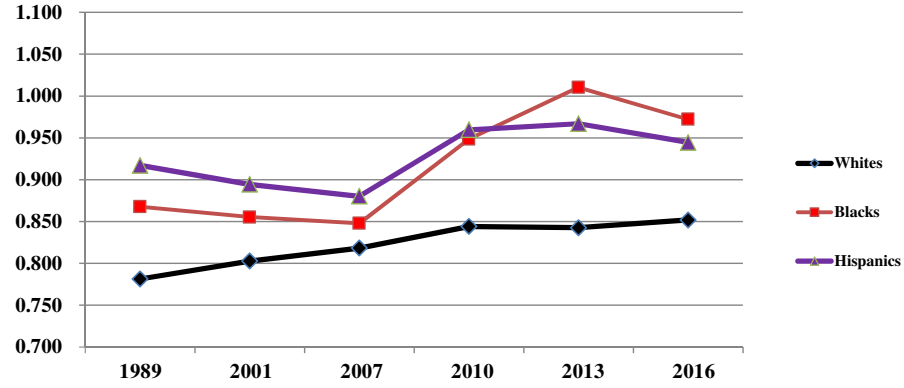

Figure 12. Gini Coefficients for Net Worth by Race and Ethnicity, 1989–2016
[Colour figure can be viewed at wileyonlinelibrary.com]

net worth of black families over years 2007 to 2010 was −9.76 percent, compared to −6.57 percent for white households (see Table 2).[15] The Gini coefficient for NW shot up for both groups but more so for African-Americans.

[15]There was almost no change in the relative homeownership rate of the two groups—both experienced moderate losses—while the share with non-positive net worth actually increased more in relative terms for white households.

TABLE 1
COMPOSITION OF HOUSEHOLD WEALTH BY RACE AND ETHNICITY, 2007 (PERCENT OF GROSS ASSETS)

Asset	Non-Hispanic Whites	African-Americans	Hispanics	Bottom 90% Whites	Two-tailed t-test			
					Black- White	Hisp.- White	Black- Bot 90% White	Hisp.-Bot90% White
Principal residence	30.8	54.0	52.5	55.9	14.7***	18.3***	1.45	4.21***
	(1.05)	(1.18)	(0.55)	(0.59)				
Liquid assets	6.6	7.6	3.9	8.8	0.6	2.40**	0.92	6.90***
	(1.02)	(1.15)	(0.49)	(0.51)				
Pension accounts	12.5	12.3	7.7	15.5	0.2	6.79***	4.50***	16.2***
	(0.62)	(0.62)	(0.32)	(0.35)				
Stock, securities, mutual funds, and personal trusts	17.1	3.4	2.5	6.4	70.8***	55.8***	13.2***	13.6***
	(0.17)	(0.09)	(0.20)	(0.21)				
Business equity and other real estate	31.3	20.9	32.9	11.9	12.7***	2.78***	12.6***	49.1***
	(0.50)	(0.65)	(0.31)	(0.30)				
Miscellaneous assets	1.7	1.8	0.4	1.5	0.2	3.05***	0.84	3.41***
	(0.36)	(0.30)	(0.19)	(0.23)				
Total assets	100.0	100.0	100.0	100.0				
Memo (selected ratios in percent)								
Debt/net worth ratio	15.4	55.3	51.1	38.6	6.23***	6.23***	3.07***	3.92***
	(4.11)	(4.90)	(2.15)	(2.37)				
Debt/income ratio	109.0	152.2	187.9	139.6	5.19***	5.19***	1.63	8.81***
	(5.07)	(6.60)	(3.67)	(4.08)				
Net home equity[a]/ total assets	20.8	27.3	28.8	33.9	5.43***	5.43***	6.71***	8.07***
	(0.80)	(0.87)	(0.43)	(0.48)				
Principal residence debt/house value	32.4	49.4	45.2	39.2	11.8***	11.8***	8.62***	7.60***
	(1.02)	(1.03)	(0.53)	(0.58)				
All stocks[b]/total assets	18.3	5.0	5.1	11.0	26.1***	26.1***	13.9***	15.6***
	(0.38)	(0.33)	(0.25)	(0.27)				
Ownership rates (percent)								

(Continues)

TABLE 1 (CONTINUED)

Asset	Non-Hispanic Whites	African-Americans	Hispanics	Bottom 90% Whites	Two-tailed t-test			
					Black- White	Hisp.- White	Black- Bot 90% White	Hisp.-Bot90% White
Principal residence	74.8 (0.72)	48.6 (0.35)	49.2 (0.30)	72.4 (0.71)	34.5***	33.0***	30.1***	30.0***
Pension assets	57.4 (0.71)	36.6 (0.30)	32.0 (0.25)	54.2 (0.79)	26.9***	33.7***	20.8***	26.7***
Stock, securities, mutual funds, and personal trusts	32.7 (0.62)	10.7 (0.17)	7.9 (0.12)	27.7 (0.71)	34.4***	39.5***	23.2***	27.4***
Stocks, directly or indirectly owned	55.4 (0.71)	28.3 (0.27)	22.4 (0.21)	51.5 (0.80)	35.8***	44.8***	27.7***	35.5***
Sample Size	3518	410	313	2132				

Standard errors are shown in parentheses.

[a]Value of principal residence less mortgage debt on principal residence.

[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.

**Significance level at 5%.

***Significance level at 1%.

TABLE 2
AVERAGE ANNUAL REAL RATES OF RETURN BY RACE AND ETHNICITY, 1989–2016 (PERCENTAGE)

	1989–2001	2001–2007	2007–2010	2010–2016	1989–2016
A. Gross assets					
1. All Households	3.01	3.10	−5.98	5.01	2.47
2. Non-Hispanic Whites	3.11	3.06	−5.88	5.06	2.53
3. African-Americans	2.30	3.05	−6.82	4.34	1.91
4. Hispanics	2.20	3.64	−7.30	4.43	1.96
B. Net worth					
1. All Households	3.97	4.04	−6.81	6.18	3.28
2. Non-Hispanic Whites	3.91	3.87	−6.57	6.08	3.22
3. African-Americans	4.34	6.00	−9.76	7.67	3.88
4. Hispanics	4.57	6.51	−10.61	7.72	4.01
Memo: difference between					
(a) Blacks and Whites	0.43	2.13	−3.18	1.59	0.66
(b) Hispanics and Whites	0.66	2.64	−4.04	1.64	0.80

Rates of return by asset type are provided in Appendix Table S2.

Calculations are based on household portfolios averaged over the period and assume the same rate of return by asset type for all three groups.

Miscellaneous assets are excluded from the calculation.

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

The Great Recession hit Hispanics even harder than blacks in terms of wealth. Mean NW among Hispanics plunged almost in half, and the ratio relative to whites plummeted from 0.26 to 0.15. The same factors were responsible as in the case of black households—the very high debt-NW ratio and the outsize share of housing in gross assets (both about the same as for black households). As a result of the collapse in housing prices, net home equity dropped by 47 percent among Hispanic homeowners, compared to 24 percent among white homeowners, and this factor, in turn, was largely responsible for the substantial decline in Hispanic NW. Indeed, as Table 2 shows, the annual real rate of return on Hispanic net worth was −10.61 percent.

There are two additional reasons that might explain the extreme drop in Hispanic net worth. First, a large proportion of Hispanic home owners bought their home in the interval from 2001 to 2007, when home prices were peaking. This is reflected in the sharp increase in their homeownership rate over these years. As a result, they suffered a disproportionately large percentage drop in their home equity. Second, Hispanic homeowners were more heavily concentrated than whites in parts of the country like Arizona, California, Florida, Arizona, and Nevada where home prices plummeted the most.

There was also a drop in the homeownership rate among Hispanic households of 1.9 percentage points from 2007 to 2010 (see Appendix Table S1, Panel E). Indeed, after catching up to white households in this dimension from 1989 to 2007, Hispanic households fell back to the same level as in 2004. The Gini coefficient for NW among Hispanics also climbed steeply.

Was there any improvement over the recovery period, 2010–2016? Black households showed gains in real income but a modest loss relative to whites. Their income in 2016 surpassed their 2007 peaks. The mean NW of black households showed a strong recovery but the racial wealth gap remained unchanged. However,

their median NW actually fell from $6,900 to $3,400, and the ratio relative to whites went down from 0.06 to 0.02. Both mean and median NW were down from their previous peak in 2007 (see Appendix Table S1, Panels A, B, C, and D). In contrast, the mean NW of whites surpassed its 2007 peak, though median NW was still far below it. There was a sharp fall in the black homeownership rate from 47.7 to 44.0 percent (statistically significant at the one percent level), which followed a more modest decrease from 2007 to 2010, and a decline relative to white households. As noted above, Killewald *et al*. (2017) find higher home foreclosure rates among black than white families during the Great Recession. There was also a steep uptick in the share of black households with no net worth. Thus, by almost all indicators, the absolute and relative position of black households deteriorated even further from 2010 to 2016.

The absolute and relative decline in the NW of black households over these years actually seems surprising in light of the fact that the annual yield on their portfolio was higher than for white households (see Table 2). The key is the sharp decline in their homeownership rate. The Gini coefficient for NW among black households continued its steep ascent between 2010 and 2016, compared to a modest uptick among whites. In the case of black households, the increase again reflects the sharp increase in the share with non-positive net worth.

Developments differed for Hispanics. Income was up from 2010 to 2016. Their mean income exceeded the previous peak in 2007 while their median income was about the same. The mean NW of Hispanic households surged and the ratio relative to white households went up from 0.15 to 0.19. Their median wealth rose, as did the Hispanic-white ratio. However, their NW was still below its 2007 peak (see Appendix Table S1, Panels A, B, C, and D).

However, like black families, their homeownership rate continued to fall, in this case from 47.3 to 45.4 percent (see Appendix Table S1, Panel E). Overall, Hispanic households had an average annual rate of return on their portfolio which was about the same as for black households and greater than white households (see Table 2). The Gini coefficient for NW among Hispanic households went down from 2010 to 2016 (see Appendix Table S1, Panel G). This trend was partly a reflection of the fact that the share with non-positive NW declined.

All in all, there was a sizeable sell-off of homes by minorities between 2007 and 2016. Among black households, the homeownership rate fell by 4.7 percentage points and among Hispanics, 3.8 percentage points. Much of this reduction was due to forced sales of homes either through short sales or foreclosures.

6. Portfolio Composition, Rates of Return, and Decomposition Analysis

6.1. *Portfolio Composition*

In order to understand wealth trends, it is first necessary to look at the portfolio composition of wealth. This section looks at the year 2007 since it is the critical turning point in wealth time trends. Among all households, owner-occupied housing was the most important household asset, accounting for 32.8 percent of total assets (see Table 1). However, net home equity—the value of the house minus outstanding mortgages—amounted to only 21.4 percent. Bank deposits, money

market funds, CDs, and the cash surrender value of life insurance (collectively, "liquid assets") made up 6.6 percent and pension accounts 12.1 percent. Bonds and other financial securities, corporate stock, mutual funds, and trust fund equity collectively amounted to 15.5 percent. Debt as a proportion of net worth was 18.1 percent, and the debt-income ratio was 1.187. The ratio of home mortgage debt to home value amounted to 34.9 percent. Stocks directly or indirectly owned through mutual funds, trusts, IRAs, 401(k) plans, and other retirement accounts comprised 16.8 percent of assets.

There are striking differences in portfolio composition among the three groups. The portfolio composition is not surprisingly very similar for white households as for all households. In contrast, black households invested a much higher share of their assets in their home, 54.0 percent. The proportion of assets invested in securities, stock, mutual funds, and trust funds and stocks directly or indirectly owned was correspondingly much lower. As noted above, Keister (2000) also finds that whites were more likely than blacks to buy high-risk, high-return assets. Interestingly, Chiteji and Stafford (1999) ascribe racial differences in portfolio composition, particularly the lower likelihood of African-Americans to hold financial assets, to the fact that children's asset allocations are influenced by those of their parents and African-American parents were less likely to hold these assets. African-Americans had much higher relative indebtedness – a debt net worth ratio of 0.553 and a debt-income ratio of 1.522. The ratio of home mortgage debt to home value was higher than overall, and as a consequence net home equity as a proportion of assets was only moderately greater than the overall ratio. The portfolio composition for Hispanics was very similar to blacks. Almost all the differences between whites and the two minority groups are statistically significant at the one percent level.

One important development is that relative indebtedness rose strongly over time among the three groups until 2010, and then dropped off. Over the whole stretch from 1989 to 2016, the debt-net worth ratio among black households was up by about half and the debt-income ratio by about three quarters, whereas the former actually declined among white households and the latter was up by only 42 percent. Like white households, the debt-net worth ratio among Hispanics was down from 1989 to 2016, while the debt-income ratio was up moderately.

There were also notable (and statistically significant at the one percent level) differences in ownership rates between whites and the two minority groups. Homeownership was much higher for whites in 2007 than blacks or Hispanics, as was the ownership of pension assets, stocks, mutual funds, securities and trust funds.

6.2. *Rates of Return*

It is next possible to translate portfolio composition into a rate of return. This is a crucial ingredient in deciphering wealth trends for the three groups. As was shown in the last section, there are fundamental differences in how the three groups hold their assets, with the two minorities holding most of their assets in housing and whites having a much greater proportion in stocks and financial assets. Relative asset price movements, particularly as between homes and stocks, will therefore be

transformed into differences in rates of return. These, in turn, will directly impact changes of wealth over time.

Table 2 shows average annual *real* rates of return for both gross assets and net worth over years 1989 to 2016. Results are based on the average portfolio composition over the period and assume that all households receive the *same rate of return* by period and asset type. Though there is some evidence reported in Section 3 above that white households may receive higher returns on some assets, particularly homes, than black households, there is no systematic evidence that this is the case across all asset classes. However, despite the existing evidence, it should be stressed at the outset that the lack of specific asset price indices by race/ethnicity, particularly for homes, constitutes an important limitation of this study. For example, there is good reason to believe that Hispanics suffered higher percentage declines in their home prices than whites (or even African-Americans) over the Great Recession because they were concentrated in the "sand states" and Florida where home prices plummeted the most. Other factors such as differences in financial literacy could also lead to variation in rates of return.[16]

It is first of interest to look at the results for all households (see Appendix Table S2 for the source data). The overall average real rate of return on gross assets rose slightly from 3.01 percent per year in the 1989–2001 period to 3.10 percent in the 2001–2007 period before plummeting to −5.98 percent over the Great Recession (2007–2010). This was followed by a substantial recovery to 5.01 percent over years 2010 to 2016.

As shown in Appendix Table S2, the largest declines in asset prices over the years 2007 to 2010 occurred for residential real estate and the category businesses and non-home real estate. The value of financial assets, including stocks, bonds, and other financial securities, registered an annual nominal rate of return of "only" −1.33 percent because interest rates on corporate and foreign bonds continued to remain relatively strong over these years. The value of pension accounts had a −0.20 percent annual nominal rate of return, reflecting the mixture of bonds and stocks held in pension accounts. From 2010 to 2016, all asset classes with the exception of liquid assets made a robust recovery. This was led by financial assets which recorded a 11.1 percent annual nominal return and businesses and non-home real estate, with a 6.8 percent annual return.

The average annual real rate of return on *net worth* reflects both the return on gross assets and leverage (the ratio of debt to net worth). The return among all households ran at four percent over the first two periods before falling off sharply to −6.81 percent in the 2007–2010 period. Once again, there was a strong recovery to 6.18 percent in the 2010–2016. It is first of note that the annual returns on net worth were uniformly higher—by about one percentage point—than those on gross assets over the first two and last period when asset prices were rising. However, in the 2007–2010 period, the opposite was the case, with the annual return on net

[16]This assumption then implies that if whites, say, receive a higher return on their stock holdings than blacks, then the estimated rate of return for whites will be biased downward and that for blacks biased upward. As a consequence, in the decomposition analysis discussed below, capital appreciation will be understated for whites and overstated for blacks and correspondingly savings will be overstated for whites and understated for blacks.

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 1989–2016 period, the annual return on net worth was 0.80 percentage points higher than that on gross assets.

There are striking differences in rates of return by race and ethnicity. The highest returns on gross assets were registered by white households except for the 2001–2007 period. In the 1989–2001 and again the 2010–2016 periods, returns for blacks and Hispanics were quite a bit lower than for whites and in a virtual tie between the two minority groups. In the 2001–2007 period, Hispanics had the highest returns, mainly due to the rapid run-up of home prices, followed by whites and blacks who in this case were in a virtual tie. Years 2007 to 2010 saw negative rates of return for all three groups but they were highest (least negative) for whites, followed by blacks and then Hispanics. Over the full 1989–2016 period, the average annual return on gross assets for white households was 0.63 percentage points greater than that of black households and 0.57 percentage points greater than that of Hispanics. The differences reflected the greater share of high yield investment assets like stocks in the portfolios of whites and the greater share of housing in the portfolio of the two minorities. Williams (2017, Chapter 3) also concludes that whites had higher returns on assets than black families.

This pattern is generally reversed when returns on net worth are considered. In this case, in the first two periods and the last, when asset prices were rising, higher returns were recorded by the two minority groups than whites but in the 2007–2010 period, when asset prices were declining, minorities registered lower (that is, more negative) returns than whites. Differences in returns between whites and minorities were quite substantial in some years. In the 2001–2007 period, the average return on net worth was 6.00 percent for blacks, 6.51 percent for Hispanics, and only 3.87 percent for whites—a difference of 2.13 percentage points between blacks and whites and of 2.64 percentage points between Hispanics and whites. The spread was less over years 2010 to 2016, 1.59 and 1.64 percentage points, respectively. The smaller differences in 2010–2016 compared to 2001–2007 were due to the much higher returns on the gross assets of whites than of the two minority groups in the later period. Moreover, over years 2007 to 2010, when asset prices declined, the return on net worth was −6.57 percent for whites, −9.76 percent for blacks, and −10.61 percent Hispanics. The spread in returns between white and minority households reflects the much higher leverage of the minority groups (see Table 1). Gittleman and Wolff (2004), in contrast, do not find evidence that the rate of return is greater for whites than for African-Americans, at least for years 1984–1994.

The very large negative return on net worth of both blacks and Hispanics was largely responsible for the precipitous drop in their mean net worth between 2007 and 2010, as will be seen below. This factor, in turn, was due to the steep drop in housing prices and very high leverage. Likewise, the very high return on net worth of the two minorities over the 2001–2007 period played a large role in explaining the robust advance of their mean net worth, despite the sluggish growth in their income. This in turn, was a result of high leverage coupled with a boom in housing prices. However, somewhat puzzling is the fact that the rate of return on net worth of the minority groups was very high over years 2010 to 2016 and yet their wealth

TABLE 3
Decomposition of the Change in Mean Net Worth by Component

Period	All	Non-Hispanic Whites	African-Americans	Hispanics
A. Dollar changes (in 1000s, 2016$)				
1989–2001	156.6	198.5	17.4	37.3
a. Capital revaluation	218.7	259.0	49.5	52.0
b. Residual	−62.1	−60.5	−32.2	−14.7
2001–2007	105.3	123.6	52.1	88.7
a. Capital revaluation	141.3	164.8	38.9	51.9
b. Residual	−35.9	−41.2	13.2	36.8
2007–2010	−99.6	−88.9	−46.4	−94.8
a. Capital revaluation	−114.7	−135.1	−36.0	−53.8
b. Residual	15.1	46.2	−10.3	−41.0
2010–2016	146.7	209.6	30.7	63.4
a. Capital revaluation	213.1	268.7	47.1	53.1
b. Residual	−66.5	−59.0	−16.4	10.4
B. Percentage decomposition				
1989–2001	100.0	100.0	100.0	100.0
a. Capital revaluation	139.7	130.5	285.2	139.4
b. Residual	−39.7	−30.5	−185.2	−39.4
2001–2007	100.0	100.0	100.0	100.0
a. Capital revaluation	134.1	133.3	74.7	58.5
b. Residual	−34.1	−33.3	25.3	41.5
2007–2010	100.0	100.0	100.0	100.0
a. Capital revaluation	115.2	151.9	77.7	56.7
b. Residual	−15.2	−51.9	22.3	43.3
2010–2016	100.0	100.0	100.0	100.0
a. Capital revaluation	145.3	128.2	153.5	83.7
b. Residual	−45.3	−28.2	−53.5	16.3

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

stagnated over these years. The paper will return to this issue below with a more formal decomposition.

The substantial differential in returns on net worth between whites and the two minority groups (three to four percentage points lower) helps explain why the wealth differential rose sharply between 2007 and 2010. Likewise, the spread of over 2 percentage points in favor of the minority groups over the 2001–2007 period helps account for their relative wealth gains. The higher rate of return of the two minorities relative to whites over 2010–2016 also helps account for the relative constancy in the mean wealth gap. The paper returns to these issues below.

6.3. *Decomposition Results*

Results shown in Table 3 indicate that capital revaluation (changes in asset values from capital gains/losses) generally explained the bulk of the change in overall mean NW by race/ethnicity. Over the 1989–2001 period, the mean NW of white households gained $198,500 (in 2016 dollars). Capital appreciation on their wealth holdings in 1989 by itself would have led to a $259,000 increase, thus accounting for 131 percent of the actual change (Panel B). For blacks, the corresponding figure was 285 percent and for Hispanics 139 percent. Over 2001–2007, while capital revaluation accounted for 133 percent of the net addition to the mean wealth of

white households, it contributed only 75 percent to that of black households and 59 percent to Hispanics. From 2007 to 2010, average wealth among white households lost $88,900 and capital losses by themselves would have caused their mean holdings to decline by $135,100, more than fully accounting for the actual loss. In contrast, among blacks, capital losses accounted for 78 percent of the actual reduction in their mean holdings and among Hispanics, even less, at 57 percent. From 2010 to 2016, the mean NW of white households rose by $209,600, with capital appreciation contributing 128 percent. Among black and Hispanic households, capital revaluation accounted for 154 and 84 percent, respectively.

The contribution of the residual, mainly savings, to wealth growth was generally much lower than that of capital gains and, indeed, generally negative. In the first period, 1989–2001, the residual made a negative contribution for all three groups, which partially offset the positive contribution of capital appreciation. Over years 2001 to 2007 capital appreciation accounted for over 100 percent of wealth gains made by white households while the residual made a negative contribution. For blacks and Hispanics, the residual was positive.

Mean wealth fell for all three groups during the next period, 2007 to 2010. For white households, the residual amounted to $46,200 but capital losses were $135,100, resulting in a $88,900 net decline in mean wealth. Black households suffered a $46,400 loss in mean wealth, with capital losses accounting for 77.7 percent of the decline. Among Hispanics, mean wealth dropped by a staggering $94,800, with 56.7 percent due to capital losses. Wealth then rose for all three groups from 2010 to 2016. Among white and black households, more than 100 percent of the gain was attributable to capital appreciation and the residual was negative. Among Hispanics, 83.7 percent of the advance was due to capital revaluation.

The next step is to decompose changes in the wealth gap over time into two components: capital revaluation and a residual. There does not appear to be a simple analytical decomposition of equation (1) into these three components. As a result, the technique used here is to add the change in the between-group wealth ratio emanating from the capital revaluation component to the actual wealth ratio. The difference between the actual wealth ratio and the newly re-computed ratio is then the measure of the contribution of capital revaluation to the change in the net worth ratio. The remaining portion is treated as a residual.

For the most part, as shown in Table 2, rates of return on net worth have been higher for minorities than whites. As a result, the effect of adding capital revaluation to initial wealth is to raise the wealth ratio between the two minority groups and whites. As shown in Table 4, the mean wealth ratio between blacks and whites fell between 1989 and 2001, from 0.168 to 0.142 or by 0.025. Differential capital revaluation of the portfolios of black and white households would have raised the racial ratio by 0.009, so that the difference in the residual component between the two groups explains more than 100 percent of the decline. Between 2001 and 2007, the wealth ratio reversed course and increased by 0.046. Capital revaluation differences between the two groups, due to the higher rate of return on the black portfolio, accounted for 42.5 percent of the gain and differences in the residual for the remainder.

Over years 2007 to 2010 the mean wealth ratio reversed course once again and plunged from 0.188 to 0.144 or by 0.045. In this case, the rate of return was 3.18

TABLE 4
DECOMPOSITION OF THE CHANGE IN MEAN NET WORTH RATIOS BY COMPONENT

Ratios	Period			
	1989–2001	2001–2007	2007–2010	2010–2016
A. Ratio between African-Americans and Whites				
1. Change in the Actual Ratio	−0.025	0.046	−0.045	0.001
2. Add Capital revaluation	0.009	0.014	−0.007	0.011
3. Residual	−0.034	0.032	−0.037	−0.010
(a) Percentage Contribution to the Change in the Ratio				
1. Change in the Actual Ratio	100.0	100.0	100.0	100.0
2. Add Capital revaluation	−35.2	30.9	16.3	1728.2
3. Residual	135.2	69.1	83.7	−1628.2
B. Ratio between Hispanics and Whites				
1. Change in the Actual Ratio	0.007	0.089	−0.107	0.036
2. Add Capital revaluation	0.014	0.023	−0.016	0.013
3. Residual	−0.006	0.066	−0.091	0.023
(a) Percentage Contribution to the Change in the Ratio				
1. Change in the Actual Ratio	100.0	100.0	100.0	100.0
2. Add Capital revaluation	184.4	25.7	15.3	36.6
3. Residual	−84.4	74.3	84.7	63.4
C. Ratio between All African-Americans and Whites in the Middle Quintile				
1. Change in the Actual Ratio	0.059	0.231	−0.022	0.075
2. Add Capital revaluation	−0.003	0.015	0.027	−0.026
3. Residual	0.062	0.216	−0.049	0.101
(a) Percentage Contribution to the Change in the Ratio				
1. Change in the Actual Ratio	100.0	100.0	100.0	100.0
2. Add Capital revaluation	−5.1	6.6	−119.9	−34.4
3. Residual	105.1	93.4	219.9	134.4
D. Ratio between All Hispanics and Whites in the Middle Quintile				
1. Change in the Actual Ratio	0.193	0.430	−0.289	0.295
2. Add Capital revaluation	0.012	0.042	0.007	−0.025
3. Residual	0.182	0.388	−0.296	0.320

(Continues)

TABLE 4 (CONTINUED)

Ratios	Period 1989–2001	2001–2007	2007–2010	2010–2016
(a) Percentage Contribution to the Change in the Ratio				
1. Change in the Actual Ratio	100.0	100.0	100.0	100.0
2. Add Capital revaluation	6.1	9.7	−2.4	−8.6
3. Residual	93.9	90.3	102.4	108.6
E. Memo: Average annual real rates of return				
Whites in the Middle Quintile	4.38	5.58	−10.82	8.21
All Black Households	4.34	6.00	−9.76	7.67
All Hispanic Households	4.57	6.51	−10.61	7.72

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

percentage points higher (that is, less negative) for whites and this factor in turn led to higher (that is, less negative) capital appreciation, which accounted for 38.5 percent of the decline. Though the gap in returns was quite high, the principal factor accounting for the large drop in the racial wealth gap was the discrepancy in the residual, which explained 61.5 percent of the change. The racial wealth ratio was basically unchanged from 2010 to 2016. In this case, differences in capital appreciation would have caused the ratio to rise but this was offset by the higher residual (likely, savings) among white households, which caused a drop in the ratio.

From 1989 to 2001, the wealth ratio between Hispanics and whites increased by a very modest 0.007, with the gap in capital appreciation making a small positive contribution and the difference in the residual offsetting this effect. Wealth grew by 82 percent among Hispanics from 2001 to 2007. Of the increase, capital appreciation made up 58.5 percent (because of the very high, 6.51 percent per year, rate of return) and the residual the remainder (see Table 3). Hispanic mean wealth then collapsed by 48 percent from 2007 to 2010. Capital losses in this case accounted for the bulk of the drop (56.7 percent). The very large negative return on Hispanic wealth holdings (−10.61 percent per year) was not enough to explain the full decline in their wealth. Hispanic wealth then took off from 2010 to 2016, with 83.7 percent due to capital gains.

The ratio of mean wealth between Hispanics and whites climbed sharply, by 0.089, from 2001 to 2007. The annual return for Hispanics was 2.64 percentage points higher than for whites and their higher capital appreciation explained a third of the increase. Between 2007 and 2010 the mean wealth ratio reversed, as it did between black and white households, and collapsed by 0.107. In this case, the return was 4.04 percentage points higher (less negative) for whites and the resulting difference in capital appreciation explained over a quarter of the decline. However, once again, the primary factor was the difference in the residual, which accounted for almost three quarters. From 2010 to 2016, the Hispanic-white wealth ratio climbed by 0.036. Both differences in capital appreciation and in the residual made positive contributions.

Another issue of interest is to compare savings behavior among the three groups. It is of note that differences in the residual—largely savings—lowered the racial net worth ratio in 1989–2001, 2007–2010, and 2010–2016 but not in 2001–2007 and lowered the Hispanic-white net worth ratio in 1989–2001 and 2007–2010 but not in the other two periods. Gittleman and Wolff (2004), for example, found that while whites devote a greater share of their income to savings, racial differences in savings rates *conditional* on income are not statistically significant. Since the savings *rate* tends to rise with income level, the greater mean income of whites should lead to a higher overall savings rate than that of the two minority groups. As a result, it would be expected that savings differences should uniformly lower the racial and ethnic wealth ratio.

There are, of course, a host of factors besides income level that affect savings behavior, including age, education, family size and composition, other demographic characteristics, financial literacy, time preference, credit availability, and the like. A full analysis of these effects is beyond the scope of this paper. However, there are two striking patterns. The first is that in 2001–2007 there was strong appreciation in home prices in the minority community and the homeownership rate, particularly among Hispanics, moved upward. These factors could account for the higher savings among the two minority groups than whites in this period. Second, in 2010–2016, there was likely a strong recovery in house prices in Hispanic communities and gains in homeownership among Hispanics at least after 2013, which could account for their positive savings. Among African-Americans, it is likely that home prices did not recover as much and the homeownership rate remained flat after 2013.[17]

7. Adding Retirement Wealth to the Household Portfolio

In the empirical analysis that follows, results are shown for three years—1989, the first year of the period; 2016, the last year; and 2007, since it is a critical turning point. One of the most dramatic changes in the retirement income system over the last three decades or so has been the substitution of DC pension plans for traditional DB plans. This section first looks at the effects of the changeover in the pension system on the growth of pension wealth. The picture that unfolds is a sharp drop in DB coverage compensated by a sizeable increase in DC coverage, at least until 2007. Moreover, while mean pension wealth gained rapidly from 1989 to 2007, it showed an absolute decline over years 2007 to 2010 followed by a recovery in 2016.

The share of white households with a DC account more than doubled over years 1989 to 2007 (see Panel A of Table 5). In contrast, DB coverage fell.[18] The share of white households covered by either a DC or a DB plan increased from 61.5 to 69.2 percent. From 2007 to 2010, the share with a DC account fell off but

[17]Also see Appendix S2.2, SA2.3, and S2.4 or additional analyses of the racial/ethnic wealth gap.

[18]Figures on DBW and SSW cannot be estimated for households under age 47 in 1983 and, correspondingly, for all households as well. As a consequence, results are shown for the period from 1989 to 2016 only.

TABLE 5
PERCENTAGE OF HOUSEHOLDS HOLDING PENSION WEALTH, 1989–2016

Category	1989	2007	2016	Two-tailed t-test, 2016		Two-tailed t-test
				Black-White	Hisp.-White	1989–2016
A. Non-Hispanic White						
DC Wealth	26.2	57.4	59.6			18.7***
DCW	(1.6)	(0.8)	(0.8)			
DB Wealth	50.5	37.2	37.8			6.45***
DBW	(1.8)	(0.8)	(0.8)			
Pension Wealth	61.5	69.2	71.8			5.38***
PW	(1.8)	(0.7)	(0.7)			
B. African-American						
DC Wealth	15.8	36.6	34.0	19.6***		7.83***
DCW	(2.1)	(1.2)	(1.1)			
DB Wealth	34.0	29.1	26.8	8.83***		2.51**
DBW	(2.7)	(1.1)	(1.0)			
Pension Wealth	39.8	49.8	50.2	16.4***		3.47***
PW	(2.8)	(1.2)	(1.1)			
C. Hispanic						
DC Wealth	12.6	32.0	30.8		21.2***	7.52***
DCW	(2.1)	(1.2)	(1.1)			
DB Wealth	24.6	16.6	19.0		15.4***	1.88*
DBW	(2.8)	(1.0)	(1.0)			
Pension Wealth	31.4	39.0	39.5		23.4***	2.51**
PW	(3.0)	(1.3)	(1.2)			
D. Differences in pension coverage						
Whites minus Blacks						
DC Wealth DCW	10.5	20.8	25.6			
DB Wealth DBW	16.5	8.1	11.0			
Pension Wealth PW	21.7	19.4	21.6			
Whites minus Hispanics						
DC Wealth DCW	13.6	25.4	28.7			
DB Wealth DBW	26.0	20.6	18.7			
Pension Wealth PW	30.1	30.2	32.3			

Note: Author's computations from the 1989, 2007, and 2016 SCF.
Standard errors are shown in parentheses. Key: Pension Wealth PW = DCW + DBW
*Significance level at 10%.
**Significance level at 5%.
***Significance level at 1%.

then recovered from 2010 to 2016, and the DC coverage rate was a little higher in 2016 than in 2007. The DB coverage rate also fell off from 2007 to 2010 and then recovered in 2016 to about the same level as in 2007. The share covered by either a DC or a DB plan was a little above its 2007 level. It is at once evident that whites were much more likely to have a pension plan than minorities. In 2016 the gap in

DC coverage was 25.6 points between whites and blacks and 28.7 percentage points between whites and Hispanics, but those in DB coverage were much smaller.

The disparity in DC coverage widened considerably over time, as the take-up rate was far greater among white workers than black and Hispanic. In contrast, the racial and ethnic gap in DB coverage fell quite substantially over these years, as participation plummeted among all groups. As a result, the racial and ethnic gap in overall PW coverage was about the same in 2016 as in 1989. Time trends are all statistically significant at the one percent level with two exceptions and racial/ethnic differences are all statistically significant at the one percent level.

Mean DCW among white households surged by a factor of 7.3 between 1989 and 2007 (see Table 6). Opposite trends are again evident for DBW. Overall, average PW more than doubled. DCW continued to expand over the Great Recession, and by 2016 was above its 2007 level. Mean DBW in 2016 was also above its 2007 level, as was overall mean PW. Over the whole period, 1989 to 2016, mean PW advanced more in percentage terms than mean net worth, spurred largely by the growth in DCW. Mean SSW among white households advanced by 70.3 percent from 1989 to 2016, less than half as fast as mean PW, while median SSW grew a bit slower. Mean retirement wealth (RW) more than doubled, while median RW was again up somewhat less.

From 1989 to 2016, mean PW rose for all three groups but more so for whites than minorities. Mean SSW was also up for all three groups but in this case more so for the two minorities. Similar trends are evident for median SSW. It is also of note that for blacks and Hispanics mean SSW was substantially greater than mean PW—by a factor about three in 2016—whereas the two were about equal for white households. However, minority households also had a lot less accumulated in their pension plans than white households. In 2016 mean PW of black households was only 30 percent that of whites. The biggest gap was in DCW—a 17 percent ratio. The ratio in DBW was 50 percent. Hispanics were even worse off in terms of PW, with a ratio of 0.22.

Over time, the racial and ethnic gap in PW expanded over years 1989 to 2016. There was little change in the ratio of DBW over these years but the ratio of DCW fell. The PW ratio between Hispanics and whites also declined. Minorities did quite a bit better in terms of SSW. The ratio in both mean and median SSW between blacks and whites advanced over these years, as did those between Hispanics and whites. Time trends in RW reflect trends in both PW and SSW. The ratio of mean RW between blacks and whites was about the same in 2016 as in 1989 because mean SSW grew faster for the former but mean PW grew slower. However, the ratio of median RW advanced from 0.33 to 0.48. The story is very similar for Hispanics, with the ethnic ratio of mean RW about the same in 2016 as in 1989 and the ratio of median RW advancing from 0.40 to 0.50. Time trends are all statistically significant at the one percent level with one exception and racial/ethnic differences are all statistically significant at the one percent level.

This section next moves to a consideration of augmented wealth. As shown in Table 7, mean NW among white households more than doubled from 1989 to 2016. Mean PAW (net worth plus DBW) grew a bit more slowly, because of the relatively smaller gains in DBW, and the increase in AW was also somewhat lower than that of net worth. The advance in median values was notably weaker. From

TABLE 6
Mean Retirement Wealth by Race/Ethnicity and Age Class, 1989–2016 (in thousands, 2016 dollars)

				Two-tailed t-test, 2016		Two-tailed t-test
Category	1989	2007	2016	Black-White	Hisp.-White	1989–2016
A. Non-Hispanic White						
Pension Wealth PW	89.7	189.7	255.3			16.1***
	(4.6)	(6.5)	(9.2)			
DC Wealth DCW	14.9	109.0	153.9			18.3***
	(1.6)	(5.1)	(7.4)			
DB Wealth DBW	74.7	80.7	101.4			4.35***
	(4.2)	(3.0)	(4.5)			
Social Security Wealth SSW	147.3	211.4	250.8			36.1***
	(1.6)	(1.8)	(2.4)			
Retirement Wealth RW	236.8	401.1	506.1			23.2***
	(5.3)	(7.3)	(10.4)			
Memo: Median SSW	136.1	183.3	224.8			18.7***
	(3.3)	(3.0)	(3.4)			
Memo: Median RW	171.0	259.8	306.7			17.0***
	(5.1)	(5.6)	(6.1)			
B. African-American						
Pension Wealth PW	40.8	76.9	76.3	17.6***		6.62***
	(3.1)	(3.6)	(4.4)			
DC Wealth DCW	3.3	27.2	25.4	16.6***		9.46***
	(0.5)	(1.8)	(2.3)			
DB Wealth DBW	37.3	49.7	50.9	8.74***		2.92***
	(2.9)	(2.8)	(3.6)			
Social Security Wealth SSW	64.4	121.4	150.6	30.6***		30.0***
	(1.7)	(1.7)	(2.3)			
Retirement Wealth RW	105.0	198.3	226.9	23.6***		17.2***
	(4.1)	(4.7)	(5.8)			
Memo: Median SSW	50.9	98.8	126.2	20.2***		10.6***
	(6.2)	(4.4)	(3.5)			
Memo: Median RW	56.9	115.9	146.1	20.4***		8.60***
	(9.1)	(5.7)	(4.9)			
C. Hispanic						
Pension Wealth PW	25.8	51.9	55.5		19.3***	5.27***
	(3.0)	(3.4)	(4.8)			
DC Wealth DCW	3.4	23.1	28.5		15.0***	6.36***
	(0.7)	(2.1)	(3.9)			
DB Wealth DBW	22.4	28.8	27.1		14.3***	1.27
	(2.7)	(2.3)	(2.6)			
Social Security Wealth SSW	70.0	123.5	149.9		31.8***	29.3***
	(1.7)	(1.6)	(2.1)			
Retirement Wealth RW	95.8	175.4	205.4		25.3***	15.6***
	(4.0)	(4.3)	(5.8)			
Memo: Median SSW	64.9	107.5	140.7		18.3***	8.64***
	(8.2)	(2.5)	(3.2)			
Memo: Median RW	67.7	115.5	151.9		20.2***	8.10***
	(9.3)	(4.9)	(4.6)			
D. Ratios in Retirement wealth by component						
Black/White	1989	2007	2016			
Pension Wealth PW	0.45	0.41	0.30			
DC Wealth DCW	0.22	0.25	0.17			
DB Wealth DBW	0.50	0.62	0.50			

(Continues)

TABLE 6 (CONTINUED)

Category	1989	2007	2016	Two-tailed t-test, 2016 Black-White	Two-tailed t-test, 2016 Hisp.-White	Two-tailed t-test 1989–2016
Social Security Wealth SSW	0.44	0.57	0.60			
Retirement Wealth RW	0.44	0.49	0.45			
Memo: Median SSW	0.37	0.54	0.56			
Memo: Median RW	0.33	0.45	0.48			
Hispanic/White						
Pension Wealth PW	0.29	0.27	0.22			
DC Wealth DCW	0.23	0.21	0.18			
DB Wealth DBW	0.30	0.36	0.27			
Social Security Wealth SSW	0.48	0.58	0.60			
Retirement Wealth RW	0.40	0.44	0.41			
Memo: Median SSW	0.48	0.59	0.63			
Memo: Median RW	0.40	0.44	0.50			

Note: Author's computations from the 1989, 2007, and 2016 SCF.
Standard errors are shown in parentheses. Key: Retirement Wealth RW = PW + SSW.
***Significance level at 1%.

1989 to 2016, median NW showed only an 11.3 percent rise. Median PAW was up by only 7.2 percent. However, because SSW advanced, median AW showed a relatively stronger gain of 33.4 percent. Mean AW also showed robust gains for black and Hispanic households. However, as for all households, median AW advanced more slowly than mean AW for the two minority groups. Median AW peaked in 2007 for the two minorities and was only slightly higher in 2016 compared to 2007 among whites.

One of the most notable findings is that the racial and ethnic gap in AW is much smaller than that in in NW. The ratio of mean AW between blacks and whites in 2016 was 0.27, compared to a net worth ratio of 0.14. The ratio of median AW between the two groups was also 0.27 in 2016, compared to a ratio of only 0.01 in median net worth. Results are similar for Hispanics. The ratio of mean AW between Hispanics and whites was 0.28 in 2016, while that in NW was 0.19, and the ratio of median AW was also 0.28, while that in NW was 0.01. The smaller gap in AW than NW is attributable mainly to the equalizing effect of SSW.

The racial ratio in mean AW fluctuated over time but by 2016 it was exactly the same as in 1989. In contrast, the ratio in mean NW was down in 2016 compared to 1989. The ratio of median AW was up over these years, while the NW ratio fell. The ratio of both mean and median AW between Hispanics and whites advanced from 1989 to 2016. While the gap in mean NW likewise lessened between the two groups, the disparity in median NW increased.

Both DBW and SSW play a role in lessening the divergence in AW relative to net worth. Adding DBW to NW has a relatively large effect on the black-white ratio, increasing the ratio by 0.04 to 0.05. However, the largest effect derives from the inclusion of SSW, which enlarges the ratio by 0.05 to 0.09, and this effect itself

TABLE 7
MEAN AUGMENTED WEALTH BY RACE/ETHNICITY AND COMPONENT, 1989–2016 (IN THOUSANDS, 2016 DOLLARS)

				Two-tailed t-test, 2016		Two-tailed t-test
Category	1989	2007	2016	Black-White	Hisp.-White	1989–2016
A. Non-Hispanic White						
1. Net Worth NW	433.2	755.2	876.0			3.96***
	(50.7)	(58.6)	(99.6)			
2. Private Augmented Wealth (PAW)	507.1	835.9	977.4			4.18***
	(51.3)	(59.0)	(100.0)			
3. Augmented Wealth AW	654.4	1047.4	1228.2			5.08***
Memo: Median	(51.6)	(59.3)	(100.3)			
1. Net Worth NW	126.2	166.3	140.5			1.3
	(9.1)	(8.1)	(6.3)			
2. Private Augmented Wealth (PAW)	187.1	227.3	200.5			0.9
	(11.5)	(9.4)	(10.2)			
3. Augmented Wealth AW	331.2	428.5	441.8			5.67***
	(13.5)	(10.0)	(14.1)			
B. African-American						
1. Net Worth NW	72.6	142.0	126.3	6.71***		1.81*
	(9.5)	(11.4)	(28.1)			
2. Private Augmented Wealth (PAW)	110.2	191.7	177.2	7.07***		2.21**
	(10.6)	(12.4)	(28.4)			
3. Augmented Wealth AW	174.5	313.0	327.8	7.92***		4.95***
Memo: Median	(11.3)	(13.1)	(28.8)			
1. Net Worth NW	3.3	10.7	1.7	20.7***		0.4
	(3.6)	(3.8)	(1.9)			
2. Private Augmented Wealth (PAW)	14.0	29.2	17.4	12.9***		−0.3
	(9.7)	(8.6)	(5.9)			
3. Augmented Wealth AW	80.6	146.2	120.9	24.2***		4.00***
	(8.5)	(8.8)	(5.3)			
C. Hispanic						
1. Net Worth NW	71.3	197.2	165.9		6.27***	2.88***
	(20.0)	(21.0)	(26.1)			
2. Private Augmented Wealth (PAW)	91.5	226.1	192.9		6.94***	3.07***
	(20.1)	(21.5)	(26.3)			

(Continues)

TABLE 7 (CONTINUED)

Category	1989	2007	2016	Two-tailed t-test, 2016 Black-White	Two-tailed t-test, 2016 Hisp.-White	Two-tailed t-test 1989–2016
3. Augmented Wealth AW	161.5	349.6	342.8		7.80***	5.37***
Memo: Median	(20.5)	(22.1)	(26.8)			
1. Net Worth NW	2.7	10.5	2.0		17.8***	0.2
	(1.7)	(3.6)	(2.9)			
2. Private Augmented Wealth (PAW)	5.4	14.8	12.2		16.8***	1.0
	(5.4)	(5.0)	(3.7)			
3. Augmented Wealth AW	84.2	137.1	124.3		21.3***	2.87***
	(12.2)	(9.0)	(6.9)			
D. Ratios by component						
Blacks/Whites	1989	2007	2016			
1. Net Worth NW	0.17	0.19	0.14			
2. Private Augmented Wealth (PAW)	0.22	0.23	0.18			
3. Augmented Wealth AW	0.27	0.30	0.27			
Memo: Median						
1. Net Worth NW: Median	0.03	0.06	0.01			
2. Private Augmented Wealth (PAW): Median	0.07	0.13	0.09			
3. Augmented Wealth AW: Median	0.24	0.34	0.27			
Hispanics/Whites						
1. Net Worth NW	0.16	0.26	0.19			
2. Private Augmented Wealth (PAW)	0.18	0.27	0.20			
3. Augmented Wealth AW	0.25	0.33	0.28			
Memo: Median						
1. Net Worth NW: Median	0.02	0.06	0.01			

(Continues)

TABLE 7 (CONTINUED)

Category	1989	2007	2016	Two-tailed t-test, 2016: Black-White	Two-tailed t-test, 2016: Hisp.-White	Two-tailed t-test: 1989–2016
2. Private Augmented Wealth (PAW): Median	0.03	0.07	0.06			
3. Augmented Wealth AW: Median	0.25	0.32	0.28			
E. Portfolio composition (percentage of AW)						
1. Non-Hispanic White						
DC Wealth DCW	2.3	10.4	12.5			27.6***
	(0.22)	(0.26)	(0.30)			
DB Wealth DBW	11.4	7.7	8.3			4.87***
	(0.60)	(0.31)	(0.25)			
Social Security Wealth SSW	22.5	20.2	20.4			0.89
	(1.93)	(4.30)	(1.32)			
B. African-American						
DC Wealth DCW	1.9	8.7	7.8	12.13***		17.5***
	(0.22)	(0.28)	(0.25)			
DB Wealth DBW	21.4	15.9	15.5	14.5***		4.67***
	(1.18)	(0.41)	(0.43)			
Social Security Wealth SSW	36.9	38.8	45.9	5.22***		1.74*
	(2.22)	(19.17)	(4.70)			
C. Hispanic						
DC Wealth DCW	2.1	6.6	8.3		9.63***	16.0***
	(0.22)	(0.26)	(0.32)			
DB Wealth DBW	13.9	8.2	7.9		0.85	5.90***
	(0.95)	(0.33)	(0.34)			
Social Security Wealth SSW	43.4	35.3	43.7		5.23***	0.05
	(6.38)	(1.33)	(4.25)			

Note: Author's computations from the 1989, 2007, and 2016 SCF.
Standard errors are shown in parentheses.
*Significance level at 10%.
**Significance level at 5%.
***Significance level at 1%.

increased over time from 1989 to 2016. The impact is even greater on the ratio of median AW. In this case, the addition of SSW augments the ratio by 0.22 to 0.28, and here again this effect generally rose over time. The results are very similar for the ratio of AW between Hispanics and whites. The largest effect on raising the ratio of mean AW comes from the addition of SSW (0.07 to 0.10) and, particularly, on the ratio of median AW (0.23 to 0.31). In these two cases, however, there is no evidence that the effects increased over time. Racial/ethnic differences in AW are

all statistically significant at the one percent level, as are time trends for mean and median AW for the three groups.

Panel E of Table 7 shows the portfolio composition of AW for the three groups. There was an almost steady rise in the share of DCW in AW among white households between 1989 and 2016, while the share of DBW fell. Together, PW rose from 13.7 to 20.8 percent. SSW fell slightly as a share of AW. When the two are added, the RW share rose by 5.0 percentage points.

The most salient difference in portfolio composition between the two minority groups and whites is the much higher share of SSW among the former. In 2016, the proportion of SSW in AW was more than twice as great for the two minorities as for white households. Black households also held a somewhat higher share of PW in their portfolio than whites. The difference is due to the fact that the former had a greater share of DBW than the latter. DCW made up a greater percentage for whites. Consequentially, RW loomed larger for blacks than whites—69.2 percent as against 41.2 percent. The differential in the share of SSW in AW between blacks and whites expanded sharply over time while that of PW contracted.

In 2016, Hispanics held a smaller portion of their wealth in PW, particularly DCW, compared to whites. However, because SSW was much more important for Hispanics, RW assumed a greater proportion of AW for Hispanics than whites—59.9 as against 41.2 percent. The percentage point gap in SSW widened between 1989 and 2016, that in PW fell, and that in RW narrowed. Racial/ethnic differences in portfolio composition are all statistically significant at the one percent level with one exception. Time trends for the share of DCW and DBW in AW are all statistically significant at the one percent level but those for the share of SSW in AW are generally not statistically significant.

Table 8 shows how differences in portfolio composition play out in terms of inequality. The Gini coefficient for PW among white households in 2016 was 0.765, much higher than that for SSW, 0.332. The inequality of RW is essentially a weighted average of that of PW and SSW (plus an interaction term). In 2016, its Gini coefficient was 0.513 and rose over years 1989 to 2016 because of the relative increase in higher inequality PW than lower inequality SSW. The Gini coefficient for NW among white households was 0.852 in 2016. The addition of DBW to NW to create PAW lowered the Gini coefficient by 0.031, since DB wealth tends to be concentrated among the middle class. Adding SSW to PAW to create AW had a much larger effect on lowering measured inequality—in this case by 0.122 points. Thus, the major equalizing effect from retirement wealth comes from Social Security, not pensions.

Inequality in NW was considerably greater among the two minority groups than whites—mainly a reflection of the higher share with zero or negative net worth. PW inequality was also higher among blacks while the inequality of SSW was about the same. Since SSW has a much greater weight in the portfolio of black households than whites, the Gini coefficient for RW was lower among the former. Adding DBW to NW to form PAW reduces the differential in the Gini coefficient between the two groups from 0.120 to 0.071. Then, adding SSW to PAW to create AW decreases the gap even more—in this case, to −0.098. That is to say, AW inequality was considerably smaller among blacks than whites.

TABLE 8
Inequality of Augmented Wealth by Race/Ethnicity, 1989–2016 (Gini coefficients)

Category	1989	2007	2016
A. Non-Hispanic White			
Pension Wealth PW	0.771	0.762	0.765
Social Security Wealth SSW	0.322	0.346	0.332
Retirement Wealth RW	0.443	0.500	0.513
Net Worth NW	0.781	0.818	0.852
PAW	0.758	0.788	0.821
Augmented Wealth AW	0.632	0.674	0.699
B. African-American			
Pension Wealth PW	0.853	0.816	0.832
Social Security Wealth SSW	0.491	0.358	0.350
Retirement Wealth RW	0.591	0.503	0.478
Net Worth NW	0.868	0.848	0.972
PAW	0.809	0.803	0.892
Augmented Wealth AW	0.646	0.597	0.601
C. Hispanic			
Pension Wealth PW	0.896	0.878	0.880
Social Security Wealth SSW	0.396	0.306	0.312
Retirement Wealth RW	0.500	0.449	0.437
Net Worth NW	0.917	0.880	0.945
PAW	0.869	0.853	0.905
Augmented Wealth AW	0.623	0.629	0.608
D. Differences in Gini coefficients			
Blacks - Whites	1989	2007	2016
Pension Wealth PW	0.082	0.054	0.067
Social Security Wealth SSW	0.169	0.011	0.018
Retirement Wealth RW	0.148	0.002	−0.035
Net Worth NW	0.086	0.030	0.120
PAW	0.052	0.015	0.071
Augmented Wealth AW	0.015	−0.077	−0.098
Hispanics - Whites			
Pension Wealth PW	0.125	0.115	0.114
Social Security Wealth SSW	0.073	−0.040	−0.020
Retirement Wealth RW	0.057	−0.051	−0.077
Net Worth NW	0.136	0.062	0.093
PAW	0.112	0.065	0.084
Augmented Wealth AW	−0.009	−0.044	−0.091

Note: Author's computations from the 1989, 2007, and 2016 SCF.

The pattern is similar for Hispanics. In 2016, PW inequality was likewise greater among Hispanics than whites but the Gini coefficient for SSW was very similar for the two groups. Because SSW was much more important in the portfolio of Hispanics, the Gini coefficient for RW was much lower among Hispanics. Once again, adding DBW to NW to form PAW lowers the differential in Gini coefficients only moderately, from 0.093 to 0.084. But adding SSW to form AW has a major effect, reducing the gap to −0.091. Here again, AW inequality was much smaller among Hispanics than whites.

Thus, the principal finding here is that while NW inequality is notably higher among minorities than whites, AW inequality is much lower. The primary reason is that minorities have a much bigger share of SSW in their portfolio, which reduces their AW inequality relative to whites. That is to say, SSW has much bigger impact on wealth inequality for minorities than whites because it is a larger share of AW.

In 2016, adding SSW to PAW reduces the Gini coefficient by 0.291 for blacks and 0.297 for Hispanics but only 0.122 for whites.

The differential in SSW inequality between blacks and whites plunged over time from 1989 to 2016. This was largely due to the sharp rise in the percentage of black households holding SSW. The difference in PW inequality fell slightly and together the gap in RW inequality declined markedly. By 2016, the Gini coefficient for RW was lower for blacks than whites. In contrast, the Gini coefficient for NW in 2016 was much higher for blacks than whites but in this case the differential widened over time. This trend reflected primarily the sharp jump in the share of black households with zero or negative NW after 2007. While AW inequality increased substantially for whites from 1989 to 2016, it fell significantly for blacks. Indeed, in 1989, AW inequality was somewhat greater for black than white households but this reversed by 2016. The gap in AW inequality plummeted from 0.015 to −0.098. These results illustrate the power of Social Security as a mechanism to level inequality. Whereas the racial differential in PAW inequality increased somewhat, the difference in AW inequality dropped by 0.113 points.

Results for Hispanics are similar. From 1989 to 2016, the difference in SSW inequality fell as the share with SSW rose. The differential in PW inequality fell slightly, and the gap in RW inequality plunged. Once again, the Gini coefficient for RW was lower for Hispanics than whites in 2016 though the opposite was the case in 1989. The Gini coefficient for NW in 2016 was much higher for Hispanics than whites, though in this case the differential fell over time. Whereas AW inequality increased by 0.067 Gini points for whites over these years, it fell by 0.015 for Hispanics, and the gap in AW inequality between Hispanics and whites went from −0.009 to −0.091. Once again SSW was the principal factor. While the differential in PAW inequality fell by 0.027 Gini points, that in AW inequality declined by 0.082 points.

8. Summary and Concluding Remarks

The story that unfolds is that the wealth gap between African-American and white families was much the same in 2007 as in 1983 (though it did lessen considerably for Hispanics). The paper documents the fact that keeping up in relative wealth was fueled by debt. Indeed, the relative indebtedness of minorities exploded from 1983 to 2007, making their finances very fragile in 2007. Specifically, minorities borrowed heavily to buy into the "American dream." From 2001 to 2007, this turned out well and high leverage coupled with the boom in housing prices explains the robust advance in the net worth of minorities. However, the flip side of extra leverage is that the collapse of house prices in the Great Recession especially hammered the private wealth of minorities—which has still not yet recovered. The proximate causes were high leverage and the high share of housing in gross assets. Because the private wealth of minorities has not recovered as yet, the present value of their future potential claims on government, through Social Security, has become even more important than it previously was. The fact that the gap in AW between minorities and whites is much smaller than that in net worth depends overwhelmingly on SSW—that is, on public sector transfers—and is thus

fundamentally different in origin (and exposed to political risk in much different ways) than net worth.

A second key finding of the paper is that portfolio differences, particularly in terms of indebtedness, play a powerful role in explaining trends in the racial/ethnic wealth gap. This finding stands in sharp contrast to the (relatively scant) previous literature on the subject (Blau and Graham, 1990; Gittleman and Wolff, 2004; Menchik and Jianakoplos, 1997) which found very little effect. These three previous studies generally miss the importance of leverage in explaining rate of return differentials. Another reason for the difference in results is that relative indebtedness rose strongly over time, particularly for blacks and Hispanics, which made the leverage effect and hence the portfolio effect likewise more important over time. However, even in this regard the effect of portfolio differences is likely to be underestimated here for the Great Recession if black and especially Hispanic house prices fell more than average over these years. Differential leverage and the resulting differences in rates of return thus play key roles in accounting for wealth trends among the three groups. Minorities hold a much higher share of their wealth in homes than whites and have a much higher debt-net worth ratio. This difference led to much higher returns on wealth for minorities when home prices were accelerating upward and much lower (more negative) returns over years 2007 to 2010 when house prices fell sharply. Wealth revaluation explains about three quarters of the advance of mean net worth among black households from 2001 to 2007 and more than three quarters of the ensuing collapse from 2007 to 2010. Among Hispanics, the corresponding figures were a little less than three fifths. Differentials in portfolio revaluation between minorities and whites accounted for 43 percent of the gain in the relative net worth of black households over years 2001 to 2007 and 39 percent of the decline from 2007 to 2010, and 33 percent of the relative gain among Hispanics over the first period and 28 percent of the drop over 2007–2010. However, as discussed above, it is likely that the revaluation effect is understated for Hispanics over years 2007–2010 since Hispanic home prices likely plunged more than average.

One important limitation of this study is the lack of specific asset price indices by race/ethnicity, particularly for homes. Other factors such as differences in financial literacy could also lead to differences by race and ethnicity in returns to holdings of financial assets like stocks. Another limitation is that the decomposition used in the analysis does not explicitly control for differences in demographics like age, education, and employment between the racial/ethnic groups. However, as argued in Section 3.5 above, differences in demographic, human capital, and related factors between racial groups lead to variation in portfolio composition, which is the underlying reason why these dissimilarities play a role in explaining the wealth gap. In this sense, the analysis *indirectly* controls for the variation in these characteristics.

A third is that when the definition of wealth is expanded to include SSW, the racial and ethnic wealth gap is markedly reduced. In 2016, the ratio of mean net worth between blacks and whites was almost doubled and that between Hispanics and whites amplified by almost half. The ratio of median wealth was boosted from about zero to 0.27 for the former and from almost zero to 0.28 for the latter. A fourth is that while net worth inequality is considerably greater among the two

minority groups than whites, the reverse is true for AW. The reason is that the portfolio composition of AW is much more heavily tilted toward Social Security among minorities than among whites, and the inequality of SSW is considerably lower than that of net worth. Indeed, the equalizing power of Social Security rose considerably over time among the two minority groups from 1989 to 2016 both in absolute terms and relative to white families.

On a broader note, this study highlights the key importance played by portfolio differences, particularly the degree of relative indebtedness, in explaining the racial/ethnic wealth gap and its change over time. It also displays the vital role played by Social Security in accounting for racial/ethnic differences in wealth holdings and in the degree of wealth inequality.

On a final note one might consider what kinds of policy remedies can help reduce the wealth gap between minorities and whites. With regard to conventional net worth, the most effective way to reduce the wealth gap would be to raise the incomes of minorities. This would have two effects. First, it would increase the amount of money available for savings. Second, it could lead to a higher *savings rate* since the savings rate tends to rise with family income (see Straub, 2019, for example for some evidence). Since wages and salaries are by far the principal source of income in minority communities, reducing labor market discrimination would be an important means to raise the income of minority families.

With regard to homeownership, there was a steep decline in the black homeownership rate since 2004 and in the Hispanic homeownership rate since 2007. Much of the decline occurred during or immediately after the Great Recession began and was due to forced sales and home foreclosures. Minority families were particularly targeted by issuers of subprime mortgages and found themselves unable to repay the mortgage principal. In this regard, stricter banking and financing regulations (some of which have been put in place) would be needed to safeguard potential minority home buyers. A related policy initiative would aim at trying to reduce "redlining." As documented in numerous studies, redlining by reinforcing existing patterns of minority residential segregation has caused a slower appreciation of minority home values than comparable white-owned properties.

With regard to retirement wealth, the results of this study highlight the importance of Social Security wealth in the minority community. As a result, efforts to cut back or curtail Social Security payouts will have a more deleterious effect on minority finances than those of whites and these should be opposed (see Appendix S2.5 for more discussion).

The participation rate for 401(k) plans, IRAs, and other defined contribution plans is extremely low among minorities. In 2016, while almost 60 percent of white households held one of these plans, only 34 percent of African-American and 31 percent of Hispanic households had one. It is likely that the low level of participation among minorities is due to two factors. First, minorities have lower income so that many cannot afford to participate in such a plan. Second, it is also likely that firms that employ minorities are less likely to offer such a plan. One policy option to consider is to legally require firms above a certain size to provide such plans and make employer contributions mandatory, as opposed to contingent on employee contributions.

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