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THE ROLE OF PERMANENT INCOME AND DEMOGRAPHICS IN BLACK/WHITE DIFFERENCES IN WEALTH

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The Role of Permanent Income and Demographics in Black/White Differences in Wealth

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ABSTRACT

We explore the extent to which the huge race gap in wealth can be explained with properly constructed income and demographic variables. In some instances we explain the entire wealth gap with income and demographics provided that we estimate the wealth model on a sample of whites. However, we typically explain a much smaller fraction when we estimate the wealth model on a black sample. Using sibling comparisons to control for intergenerational transfers and the effects of adverse history, we find that differences in income and demographics are not likely to account for the lower explanatory power of the black wealth models. Our analysis of growth models of wealth suggests that differences in savings behavior and/or rates of return play an important role.

Keywords: Black-White Wealth Gap, Siblings, Savings

JEL classifications: D31, J7, D91

1 Introduction

The wealth gap between whites and blacks in the United States is much larger than the gap in earnings. For example, Menchik & Jianakoplos (1997) document that the average wealth of black households is 20% of the average wealth of white households in the 1976 National Longitudinal Survey of mature men (NLSY) and 23% in the Survey of Consumer Finances (SCF), even though average black income is 60% and 50% of average white income in the two samples. The gap in wealth has implications for the social position of African Americans that go far beyond its obvious implications for the consumption levels that households can sustain. This is because wealth is a source of political and social power, influences access to capital for new businesses, and provides insurance against fluctuations in labor market income. It affects the quality of housing, neighborhoods, and schools a family has access to as well as the ability to finance higher education. The fact that friendships and family ties tend to be within racial groups amplifies the effect of the wealth gap on the financial, social, and political resources available to blacks relative to whites.

One objective of the paper is to explore the extent to which the huge race gap in wealth can be explained with income and demographic variables. In some instances we are able to explain the entire wealth gap provided that we estimate the wealth model on a sample of whites. However, we typically explain a much smaller fraction when we estimate the wealth model on a black sample. This finding reflects the fact that there are large differences between whites and blacks in the relationship of wealth to income and demographics.

Several previous studies have investigated the sources of the black/white wealth gap, including Blau & Graham (1990), Smith (1995), Avery & Rendall (1997), and Menchik & Jianakoplos (1997). However, limitations in the way these previous studies have examined the contribution of income and demographic patterns to the wealth gap make conclusions about the importance of these factors and the differences in the white and black wealth models worth revisiting.

First, the existing studies do not use an adequate measure of permanent income, which is a key determinant of wealth. Due to data limitations Smith (1995) and Avery & Rendall (1997) base their wealth models on current income alone rather than on current and permanent income. Blau & Graham (1990) and Menchik & Jianakoplos (1997) decompose income into current income and permanent income,

where permanent income is the component that is predictable given race, sex, age, education, health status, number of children, and geographic location. Since wealth is a nonlinear function of income, however, use of the within-cell variation is necessary to precisely estimate wealth models. Moreover, because high-income individuals tend to have disproportionately large wealth holdings, failure to accurately measure the tails of the distribution of permanent income might lead to incorrect estimates of the contribution of permanent income to the wealth gap. We address this issue by using panel data from the Panel Study of Income Dynamics (PSID) to construct a measure of permanent income.[1]

Second, previous studies control for current demographic variables such as marital status and presence of children but not for demographic histories. Because wealth at a point in time reflects a flow of savings over many previous years, however, it is likely to be influenced by demographic histories as well as by current demographic variables. We address this by constructing marriage histories and child bearing and rearing histories. In Section 2, we give details on how we construct permanent income and demographic histories.

In studying the role played by income and demographic variables in the wealth gap, one must address a number of difficult issues. First, the skewed distribution of wealth holdings along with the significant fraction of zero or negative wealth holdings cause problems for standard functional forms, such as the level of wealth and the log of wealth. Second, demographic variables interact with income variables in determining wealth holdings, thus demanding models that accommodate a rich pattern of interactions between these two sets of variables. To address these issues we use both mean and median regression and work with models of the wealth/income ratio as well as the level and log of wealth (Sections 6 and 7).

A third problem arises from the substantial differences between the white and black distributions of income and demographics in combination with the fact that relatively flexible functional forms must be used to capture the nonlinearity of wealth in income. These two features make it difficult to accurately estimate race-specific wealth models over the full range of income.[2] In Section 9, we address this "nonover-

[1]Hurst, Luoh & Stafford (1998) also use the PSID to examine race differences in both wealth holdings and wealth accumulation. They use the average of income over the previous 5 years as their measure of permanent income. We discuss their results below.

[2]Henceforth income is short for non-asset income and all amounts quoted are deflated to 1989 US$ using the CPIU.

lap" problem in several ways. In particular, we propose a new approach that uses the estimated standard error of predicted wealth for individuals from one group based on the wealth model for the other group as a guide toward choosing comparison groups of whites and blacks.

Because of our improved income and demographic variables, we typically explain more of the wealth gap than previous studies. At the same time, we confirm earlier results that suggest large disparities in the explanatory power of the wealth models of whites and blacks.[3] In the case of single men and single women, for example, we can explain the *entire* race gap in the level of wealth with income and demographics *provided that we estimate the wealth equation on the white sample.* In contrast, we typically explain only a small fraction when we estimate the wealth model on a sample of blacks. In the case of couples, income and demographics account for 79% of the wealth gap when we use the wealth mean regression model for whites. We explain only 25% when we use the wealth model for blacks. When we use the ratio of wealth to permanent income as our measure of wealth, we again explain a much larger fraction of the wealth gap using the coefficients for whites than the ones for blacks, although for couples and single females the fraction explained is smaller than in the case of the level of wealth. Our median regression estimates in Section 7 parallel our mean regression estimates in Section 6, but the percentages of the gap explained using the white wealth model are somewhat lower.

In Section 8 we show that race differences in self-employment patterns are a significant part of a full explanation of black/white wealth differences, although causality is ambiguous. Separate analyses of the major components of wealth (main home equity, the value of farms and businesses, and stocks/mutual funds and individual retirement accounts (IRAs)) in Section 10 confirm our findings for total wealth. All of these results reflect the fact that the wealth of whites is much more sensitive to income and demographics than the wealth of blacks.

The fact that we can explain most and in some cases all of the wealth gap with the white but not with the black wealth model leads us to focus on a second question: *Why* are the wealth holdings of blacks less sensitive to income and in demographics than the wealth holdings of whites? Starting with Blau & Graham (1990), some researchers have hypothesized that differences in inter vivos transfers and inheritances play a

[3]See Scholz & Levine (2002) for an up to date survey of the literature on the black/white wealth gap.

major part in explaining the wealth gap. Indeed, Smith (1995), Avery & Rendall (1997), Menchik & Jianakoplos (1997), and Gittleman & Wolff (2001) suggest that differences in intergenerational transfers contribute to wealth disparities.

In Section 11, we propose a theoretical model of intergenerational linkages to show how the legacy of discrimination could lead to a link between wealth and income that is stronger for whites than for blacks. We study this possibility by relating differences among siblings in current and permanent income and demographics to differences in wealth. Using sibling comparisons largely neutralizes the effects of disparities between whites and blacks in inter vivos transfers and inheritances and provides a way of controlling for the effects of an adverse history on the relative position of blacks. With fixed-effects coefficient estimates from the white sample we can explain 104% of the race gap in the wealth level, while the corresponding value based on the model for blacks is only 49%. Our sibling results thus confirm that wealth holdings are much less strongly related to income and demographic variables among blacks than among whites. They are also consistent with evidence in Altonji & Villanueva (2001) based on both the PSID and the survey of Asset and Health Dynamics (AHEAD). This suggests that little of the difference between whites and blacks in the effect of income on wealth is due to differences in inter vivos transfers and inheritances.

Other possibilities are that savings rates or the rates of return to assets differ. In Section 12, we look at the combined effect of these two factors by estimating models for the growth of wealth as a function of income and demographic factors. In the case of couples, income and demographic factors explain 74% of the race gap in the growth of wealth when we use the growth model for whites but only 49% when we use the growth model for blacks. The discrepancy is even larger (84% versus 30%) when we study growth in the ratio of wealth to permanent income. These findings suggest that difference in savings behavior or rates of return on assets play a key role in explaining the wealth gap. However, the results are not entirely conclusive for reasons we discuss below.

2 Data

The database is constructed from the main PSID files, the supplemental wealth files, the marriage history file, and the childbirth and adoption file. The PSID is based on a random sample of U.S. households in 1968 and a separate low income sample.

The households were interviewed annually, providing many years of income data and long demographic histories for the panel members. Wealth data were collected in 1984, 1989, and 1994. The PSID contains a full set of variables only for household heads ("heads") and their spouses ("wives").[4] For this reason our analysis is based on persons who were either a head or a wife in one of the three years for which wealth surveys were conducted.

We use our samples without weighting when estimating wealth models (see Section 4 for details), but we use the family core weights that are supplied with each wave of the PSID to make our estimates nationally representative when computing descriptive statistics (Section 3) and wealth decompositions (Section 5). We assign equal weight to each of the 1984, 1989, and 1994 wealth surveys when we pool the data.

Real non-asset family income is our measure of current income. We exclude asset income because it may be affected by prior transfers and because it is a function of wealth. Our measure of wealth includes home equity, but it excludes Social Security and pension wealth. These are important exclusions, and it would be desirable to incorporate them into future research. In Section 10, we separately analyze the major components of wealth – main home equity (house value net of mortgage balance), farms/businesses, and stocks/mutual funds and IRAs.[5]

Throughout, the log wealth (log current income) measures are constructed by taking the log of the respective values truncated at 50 (1,000). This allows us to keep observations with zero or negative wealth (current income) in our sample. Our results for levels, ratios and logs are not sensitive to excluding observations with wealth below 50.

2.1 Measuring Permanent Income

We use the panel data on individuals to construct two measures of permanent income. They are based on the regression model

$$y_{it} = X_{it}\gamma + e_{it}, \tag{1}$$

[4]The PSID convention is that the husband is the household head in a married couple.

[5]The other components of our wealth measure are checking/savings, credit cards, other real estate, vehicles, and other savings/assets. See Hurst et al. (1998) for descriptive statistics.

where y_{it} is either the level or the log of nominal non-asset family income of person i in year t. (Recall that, given the level of current income y_{it}, the log of current income is defined as $\ln \max\{y_{it}, 1000\}$.) X_{it} consists of a fourth-order polynomial in age (centered at 40), a marital status dummy, an indicator for children, the number of children, and a set of year dummies. Define e_{it} to be the sum of an individual-specific effect and an idiosyncratic error term, $e_{it} = v_i + u_{it}$, and assume that the serial correlation in u_{it} is sufficiently weak to be ignored in computing permanent income. We estimate the parameters of equation (1) from race- and gender-specific mean regressions using all observations in which the person was either a head or wife. Our measure of permanent income is the individual-specific effect v_i, estimated as the mean of the residuals from the regression for each person. This measure is basically a time-average of past, current, and future income adjusted for demographic variables and time.[6] We dropped individuals with less than 4 observations from the subsequent analysis to ensure that transitory income and measurement error will have only a minor effect on our permanent income measures.[7]

A simple example can be used to illustrate the possible consequences of the difference between our measure of permanent income and the one used in previous studies. Let i index individuals and j demographic groups. Suppose wealth W_i^j is a quadratic function of permanent income y_i^j,

$$W_i^j = \alpha_0 + \alpha_1 y_i^j + \alpha_2 (y_i^j)^2 + \epsilon_i^j, \quad \alpha_2 > 0.$$

Suppose that the coefficients α_0, α_1, and α_2 are the same for blacks and whites and that wealth is a convex function of permanent income. In this case the entire wealth gap is due to differences in the distribution of income. In line with previous studies, decompose y_i^j into its expected value y_i^{j*} given a set of predictors X_i^j such as education

[6] An alternative measure of permanent income is based upon nominal non-asset family income prior to the year of the wealth survey. It makes sense to exclude future earnings to the extent that individuals are highly uncertain about them and to the extent that income shocks are fairly persistent. We typically explain as much or more of the wealth gap with this backward-looking measure than with our usual measure.

[7] For white males, the 10th percentile of the numbers of observations used in the computation of the permanent income measure is 7, the median is 20, and the 90th percentile is 27. The corresponding numbers are 7, 16, and 27 for black males, 8, 22, and 27 for white females, and 7, 19, and 27 for black females, respectively. Between 15.2% and 32.7% of individuals in each race-gender group have been observed for 27 years, over the full course of the PSID. Our results are not sensitive to requiring 2 instead of 4 years of income data.

and occupation and an error term u_i^j, $y_i^j = y_i^{j*} + u_i^j$. In this case,

$$E(W_i^j|y_i^{j*}) = E(E(W_i^j|y_i^j)|y_i^{j*}) = \alpha_0 + \alpha_1 y_i^{j*} + \alpha_2 (y_i^{j*})^2 + \alpha_2 Var(u_i^j|y_i^{j*})$$

and the stochastic regression function relating W_i^j to y_i^{j*} is

$$\begin{aligned} W_i^j &= \alpha_0 + \alpha_2 Var(u_i^j|y_i^{j*}) + \alpha_1 y_i^{j*} + \alpha_2 (y_i^{j*})^2 \\ &\quad + \alpha_1 u_i^j + \alpha_2 [(u_i^j)^2 - Var(u_i^j|y_i^{j*})] + 2\alpha_2 u_i^j y_i^{j*} + \epsilon_i^j. \end{aligned}$$

Suppose the limited range of y_i^{j*} forces the researcher to choose linear specification, as do Blau & Graham (1990) and Menchik & Jianakoplos (1997). Then if wealth is a convex function of income and permanent income is lower for blacks than whites, one will obtain a flatter slope for blacks than whites. This difference will be reinforced if $Var(u_i^j|y_i^{j*})$ is an increasing convex function of y_i^{j*}, which is the case in our data. As a consequence, using coefficients estimated on one group to predict for the other group will underestimate wealth holdings, leading one to underestimate the fraction of the group difference in wealth that is due to the group difference in income.

We have used the methodology of Blau & Graham (1990) and Menchik & Jianakoplos (1997) to measure permanent income. As discussed in Section 7.3 of Altonji & Doraszelski (2001), the use of panel data to construct permanent income measures increases the percent of the gap in wealth levels that can be attributed to differences in income and demographic characteristics. Not surprisingly, we experienced difficulties with Blau & Graham's (1990) approach when we allowed for nonlinear effects of permanent income.

2.2 Constructing Demographic Histories

We combine the main PSID files with the marriage history file and the childbirth and adoption file to create a demographic history for each individual that describes past and present marriages and child bearing and rearing. In the case of couples, the demographic histories describe the number of marriages (separate for heads and spouses), the tenure of the current marriage, and the number of children born or adopted (separate for heads and spouses). In the case of singles, the demographic histories indicate whether the recent marriage ended in widowhood, whether the most recent marriage ended in divorce, and the number of children born or adopted. We

complement the demographic histories by a rich set of current demographic variables.

2.3 Treatment of Outliers

The wealth data contain a number of extremely high or extremely low observations. We eliminated extreme values by first estimating separate median regression models for whites and blacks using the specification described in Section 4 below, pooling the residuals from those models, and dropping the observations corresponding to the bottom 0.5% and top 0.5% of the residuals. The procedure was conducted separately for couples, single men, and single women. We used separate trimming procedures for the level, ratio, and log models. Eliminating the outliers dramatically reduced the sampling error of our mean regression models, at the likely cost of some bias. Our main findings are not sensitive to excluding the outliers but standard errors are dramatically affected, and the size of the gap between whites and blacks is reduced somewhat. All results are for the trimmed sample unless noted otherwise.

3 Race Differences in Wealth, Income, and Demographics

We begin by providing some basic facts about race differences in wealth and the key income and demographic variables. To save space, we present descriptive statistics for the pooled sample of observations for 1984, 1989, and 1994.[8]

Table 1 provides the mean, median and standard deviation for the level of wealth (W), the wealth/permanent income ratio (W/y), and the log of wealth ($\ln W$). (Recall that, given the level of wealth W, the log of wealth is defined as $\ln \max\{W, 50\}$.) It also reports descriptive statistics for the levels and logs of current and permanent income in 1989 US$. Outliers are included so that the numbers will better reflect population totals. The corresponding descriptive statistics for the trimmed sample can be found in Table A1 of Altonji & Doraszelski (2001).

[8]The ratio of black to white wealth remains roughly constant over time for couples and single females but increases dramatically from 0.14 in 1984 to 0.33 in 1994 for single men. With respect to permanent income black couples seem to lose some ground (the ratio is falling from 0.72 for both heads and wives in 1984 to 0.65 for heads and 0.67 for wives in 1994). Finally, the ratio of current income drops from 0.81 in 1984 to 0.67 in 1994 for single females.

In the case of couples, the mean of wealth is 53,472 for blacks and 211,602 for whites, a ratio of 0.25. The race gap for current non-asset family income is much smaller with a mean of 30,153 for blacks and 41,519 for whites, a ratio of 0.73. This is reflected in our permanent income measures, which have a mean of 32,450 for black heads and 46,949 for white heads. The permanent income values are 30,086 and 43,097 for black and white wives, respectively. The black/white ratio of permanent income is 0.70. Moreover, the distributions for current and permanent income are much more concentrated than the distributions for wealth. The much larger racial disparity in wealth is reflected in the wealth/permanent income ratios. The mean wealth/permanent income ratio for black couples is 1.80, which is only 37% of the value of 4.87 for white couples.

We also report descriptive statistics for main home equity, the value of farms and businesses, as well as the value of stocks, mutual funds, and IRAs in Table 1. For each of these three components of wealth we report the mean, median and standard deviation for the households who have nonzero values as well as the overall mean and standard deviation when including the zero values. The race gap in home equity is smaller than the gap in total wealth. With zero values included, the mean of home equity is 25,293 for black couples, which is 43% of the value of 58,462 for white couples. In contrast, only 4% of black couples have assets in a farm or a business, while 20% of white couples have such assets. Including the zero values, black couples hold an average of 2,689 in farms or businesses, which is only 7% of the mean of 39,149 for whites. Finally, black couples hold only 4,073 in stocks, mutual funds, and IRAs, which is only 15% of the corresponding mean value of 27,589 for whites. Only 15% of black households hold wealth in this category, while 40% of white households do.

The situations for single men and for single women mirror the one for couples.[9,10]

[9]The mean of permanent income for single females exceeds the mean of current income dramatically. In part, this reflects the fact that our income measure includes years in which the individual was married, although the income observations that go into permanent income are adjusted for the effects of marital status. Since the average age for single black females is about the same as for black couples while the average age for single white females is higher than that for white couples, the differences in permanent income do not seem to reflect the earlier position of singles in the life-cycle. Instead, they seem to be due to inherent differences in earnings potentials across demographic groups. Similar observations hold for single men.

[10]In the trimmed samples the minimum and maximum of wealth are $-138,918$ and $7,460,000$ for white couples, $-128,016$ and $1,441,646$ for black couples, $-42,009$ and $1,930,283$ for single white males, $-55,223$ and $627,530$ for single black males, $-37,652$ and $602,429$ for single white females, and $-49,031$ and $516,500$ for single black females.

In Table 2 we present descriptive statistics for our demographic variables. The values for the trimmed sample are very close to the values for the full sample and are omitted for brevity.

The means for many of the variables differ considerably across races. In the case of couples, for example, the average number of children currently living in the family unit is higher for blacks (1.21) than for whites (0.92). The difference in the total number of own or adopted children is even bigger, with an average of 2.86 for black heads and 2.43 for white heads. This points to the potential importance of controlling not only for current demographics but also for demographic histories.

Table 2 finally confirms a large literature showing that the black self-employment rate is only about one third of the white self-employment rate and that this ratio has been relatively constant for the past 70 years (Fairlie & Meyer 1997). As we show in Section 8, this variable has a substantial association with wealth, although the direction of causality is not clear.

4 Econometric Models

Let $i = 1, \ldots, N^j$ index individuals or couples and j demographic groups, where j is b for blacks and w for whites. Let W_i^j denote wealth, Y_i^j a vector of income variables (including current income y_{it} and permanent income y_i), and X_i^j a vector of demographic variables. Since we have panel data on wealth, a number of variables in addition to y_{it} depend on the calendar year t as well as i, but we leave the time subscript implicit.

Our basic wealth model specifies the level of wealth to be linear in the income and demographic variables and is given by

$$W_i^w = \alpha_0^w + Y_i^w \alpha^w + X_i^w \beta^w + \epsilon_i^w, \quad (2)$$

$$W_i^b = \alpha_0^b + Y_i^b \alpha^b + X_i^b \beta^b + \epsilon_i^b, \quad (3)$$

where α_0^w, α^w, and β^w are the regression intercept and slope parameters for whites, ϵ_i^w is the error term, and α_0^b, α^b, β^b, and ϵ_i^b are the corresponding parameters and error term for blacks. Separate sets of regressions are specified for couples, single males, and single females, so the slopes and intercepts depend on sex and marital status as well as on race. The observations are pooled across the 1984, 1989, and 1994 wealth

surveys.

In Sections 6 and 7, we report mean regression (OLS) and median regression results, respectively, and so alternatively define $\alpha_0^j + Y_i^j \alpha^j + X_i^j \beta^j$ to be the conditional mean or the conditional median regression function. There are a number of reasons why median regression estimates are of interest. First, one may simply be more interested in the median of wealth than in the mean of wealth for persons with a given set of characteristics. Second, the skewness and fat tails of the wealth distribution suggest that it may be easier to estimate conditional medians (Koenker & Bassett 1978, Narula & Wellington 1982).

Given that the level of wealth is used as the dependent variable, equations (2) and (3) impose additive separability between the income and demographic variables. We work with the levels of wealth because much of the public discussion is couched in terms of levels and because of the large fraction of the population with zero or negative wealth. However, we doubt that there is any sensible specification of consumption preferences over the life course, with or without bequests, that would imply that the conditional mean of the level of wealth is additively separable in income and demographic variables. It implies, for example, that the effect of having another child on wealth does not depend on permanent income, which seems unlikely. Consequently, we also work with the log of wealth and the ratio of wealth to permanent income of the head as the dependent variable. The log model implicitly allows for multiplicative interactions in the equation for the level of wealth. However, the log specification is poorly suited as a wealth model because wealth holdings are frequently close to zero or even negative. We deal with this problem by setting the values of wealth below 50 to 50 prior to taking logs. The ratio specification avoids this problem altogether and implies that the effects of demographic variables are proportional to permanent income.

Our choice of control variables is driven largely by previous studies of wealth differences, although our specifications of permanent income and marriage and child bearing and rearing histories are more elaborate. We chose to start with and stick to a fairly broad set of variables rather than "fish around" for a shorter list of variables that are statistically significant.

In the case of couples, the income controls included in Y_i^j are current family non-asset income, permanent income of the husband, permanent income of the wife, the squares of current income, head's permanent income, and wife's permanent income, as

well as the products of current family income with the head's and the wife's permanent income.[11] The income controls in the case of singles are similar except that spouse variables are excluded. We also experiment with cubic income specifications below.

Most of our demographic controls are listed in Table 2.[12,13] In addition, we include fourth-order polynomials in the age of the husband and in the age of the wife (centered at 40) in X_i^j.[14] Finally, we include year dummies for the 1984 and the 1994 wealth surveys.

It is useful to discuss our choice of variables in light of economic theories of wealth. The basic life cycle model of consumer behavior augmented to include a bequest motive suggests that wealth at a point in time will be influenced by the level and timing of earnings over the lifecycle, rates of time preference, rates of return, and consumption needs of the household. This suggests a role for both current and permanent earnings, powers of age, and various demographic variables that may influence the level and timing of consumption needs and perhaps are related to rates of time preference. Some of the variables we include, such as health status, are likely to operate through several of these channels. We do not have direct measures of rates of return. Recent work emphasizes precautionary savings and risk aversion, suggesting a role for variables measuring risk exposure, tolerance, insurance and ability to borrow against future income. We do not have direct measures of these factors either. Some of the race differences in the effects of variables that we include may, however, be related to these factors.[15]

[11] Recall that the permanent incomes of husbands and wives who have been married for many years are based on the same income data and are essentially the same. We include them separately to allow for the fact that income of the husband and the wife prior to marriage may have different effects on wealth in marriage. We obtain very similar wealth decompositions when we use the average of the husband's and the wife's permanent income.

[12] We include the wife's work hours because it has been used in some of the previous studies, although there are some obvious endogeneity issues that may lead to different biases for whites and blacks. The wealth decompositions in Table 3 below are not very sensitive to dropping it.

[13] Smith (1995) finds that "healthier households are wealthier ones" for both blacks and whites. Hence, controlling for health status helps to explain the wealth gap. The question of causality, however, is tricky.

[14] Because we estimate wealth models by demographic group, our age controls implicitly account for group differences in life expectancy.

[15] See Browning & Lusardi (1996) for a survey of the consumption and savings literature. Scholz & Levine (2002) organize their survey of the black/white wealth gap around the key hypotheses from that literature.

5 Wealth Decompositions

We evaluate the explanatory power of our wealth models using a slightly modified regression decomposition (Blinder 1973, Oaxaca 1973) that allows for median regression models and accommodates the use of population weights in computing the wealth gap. Let $\{\omega_i^j\}_{i=1}^{N^j}$ denote a set of population weights such that $\omega_i^j > 0$ and $\sum_{i=1}^{N^j} \omega_i^j = 1$. (See Section 2 for details on how the weights are constructed.) Let $Z_i^j = (1, Y_i^j, X_i^j)$ and $\theta^j = (\alpha_0^j, (\alpha^j)', (\beta^j))'$. Equations (2) and (3) can be written as

$$W_i^j = Z_i^j \theta^j + \epsilon_i^j, \quad j = w, b,$$

where the definition of θ^j and ϵ_i^j depends on whether we use mean or median regression. Let $\hat{W}_\bullet^j = \sum_{i=1}^{N^j} \omega_i^j (Z_i^j \hat{\theta}^j)$ denote the mean of the predictions for individuals in demographic group j, where $\hat{\theta}^j$ is an estimate of θ^j. For a given family type, e.g. couples, write

$$\begin{aligned} \hat{W}_\bullet^w - \hat{W}_\bullet^b &= \sum_{i=1}^{N^w} \omega_i^w (Z_i^w \hat{\theta}^w) - \sum_{i=1}^{N^b} \omega_i^b (Z_i^b \hat{\theta}^b) \\ &= \left\{ \sum_{i=1}^{N^w} \omega_i^w (Z_i^w \hat{\theta}^b) - \sum_{i=1}^{N^b} \omega_i^b (Z_i^b \hat{\theta}^b) \right\} + \left\{ \sum_{i=1}^{N^w} \omega_i^w (Z_i^w \hat{\theta}^w) - \sum_{i=1}^{N^w} \omega_i^w (Z_i^w \hat{\theta}^b) \right\}. \end{aligned}$$

The first term measures what the contribution to the wealth gap of race differences in the explanatory variables would be if the relationship between wealth and the explanatory variables was given by $\hat{\theta}^b$, the coefficient vector for blacks. The second term evaluates the contribution to the wealth gap of differences between whites and blacks in the wealth coefficients using the distribution of the explanatory variables for whites. The first term thus represents the part of the wealth gap $\hat{W}_\bullet^w - \hat{W}_\bullet^b$ that is "explained" by differences between blacks and whites in the explanatory variables, while the second term represent the unexplained part of the wealth gap.[16] We contrast

[16] DiNardo, Fortin & Lemieux (1996) and Barsky, Bound, Charles & Lupton (2002) discuss ways of decomposing group differences into the effects of observed characteristics and unobserved differences in the context of nonparametric statistical models. The major difficulty with these approaches is that they are hard to apply when the number of explanatory variables is large, as in our case.

the decomposition based on the above equation with the decomposition

$$\hat{W}_{\bullet}^{w} - \hat{W}_{\bullet}^{b} = \left\{ \sum_{i=1}^{N^w} \omega_i^w (Z_i^w \hat{\theta}^w) - \sum_{i=1}^{N^b} \omega_i^b (Z_i^b \hat{\theta}^w) \right\} + \left\{ \sum_{i=1}^{N^b} \omega_i^b (Z_i^b \hat{\theta}^w) - \sum_{i=1}^{N^b} \omega_i^b (Z_i^b \hat{\theta}^b) \right\},$$

which uses the coefficient vector for whites to measure the part of the wealth gap that is explained by differences in income and demographics.

Suppose for the moment that we assign equal weights to all observations, $\omega_i^j = 1/N^j$. In the context of a mean regression model, this implies $\hat{W}_{\bullet}^{j} = \bar{W}_{\bullet}^{j}$, where $\bar{W}_{\bullet}^{j}$ denotes the sample mean, because $\sum_{i=1}^{N^j} \hat{\epsilon}_i^j = 0$ by construction. In general, this is not true for median regression models, so the sample median differs from the mean of the conditional medians. Furthermore, because we estimate the model parameters without weighting but weight the observations when performing decompositions, $\sum_{i=1}^{N^j} \omega_i^j \hat{\epsilon}_i^j$ differs from zero even for mean regression models.

6 Mean Regression Results

In this section we present decompositions of the race gap in the level of wealth (W), the wealth/permanent income ratio (W/y), and the log of wealth ($\ln W$) into a component that is explained by differences in income and demographic variables and an unexplained component. Since our focus is on the wealth decompositions rather than on the estimated wealth models (as given by equations (2) and (3)) themselves, we do not discuss the coefficients estimates in any detail. The coefficient estimates can be found in Tables A2, A3, and A4 of Altonji & Doraszelski (2001).

6.1 Level Models

The top row of Panel A in Table 3 reports decompositions of the wealth level W_i for couples. The mean (standard error) of the wealth gap $\hat{W}_{\bullet}^{w} - \hat{W}_{\bullet}^{b}$ is 116,795 (4,535).[17] Using the coefficient estimates for the white equation $\hat{\theta}^w = (\hat{\alpha}_0^w, (\hat{\alpha}^w)', (\hat{\beta}^w)')'$ we find that the race difference in income and demographics explains 92,589 (4,855) of the wealth gap, or 79%. We obtain strikingly different results with the black equation.

[17] As we pointed out in Section 5, $\hat{W}_{\bullet}^{w} - \hat{W}_{\bullet}^{b}$ need not equal $\bar{W}_{\bullet}^{w} - \bar{W}_{\bullet}^{b}$, the difference in the weighted sample means of wealth. From Table A1 of Altonji & Doraszelski (2001), the latter figure is 115,228(=187,589-52,361).

Using $\hat{\theta}^b = (\hat{\alpha}_0^b, (\hat{\alpha}^b)', (\hat{\beta}^b)')'$ we are only able to explain 29,009 (4,509) or 25% of the wealth gap.

Our results for single men (see second row of Panel A of Table 3) echo the findings for couples. Using the coefficient estimates for whites we find that black men would have 20% more wealth than white men if they had the same income and demographics as white men. This result suggests that the large wealth gap simply reflects racial differences in income streams, human capital variables, and current and past demographic variables. However, we again obtain very different results when we use the wealth model for blacks to perform the wealth decomposition. In this case only 31% of the gap of 40,365 (2,613) is attributable to income and demographics.

As the third row of Panel A of Table 3 shows, for single women the race gap in wealth is 46,575 (2,204). The model for the white sample implies that black women would have 103% of the wealth that white women hold if they had the same income and demographics as white women. However, the wealth model for blacks implies that only 33% of the gap is attributable to income and demographics.

The large discrepancy between the white and the black wealth models in the degree to which racial differences in income and demographic variables explain the wealth gap is a key theme in our analysis. It reflects the fact that wealth differences among blacks are much less sensitive to differences in income and demographics than wealth differences among whites.

To gain further insight into this key property of the wealth equations, we investigate the effect of a unit increase in current income y_{it} and permanent income y_i at the sample mean (pooled over race) of y_{it} and y_i (see Table A2 of Altonji & Doraszelski (2001)). The effect of a unit increase in current income is .64 for white couples and .69 for black couples. The effect of increasing the husband's (wife's) permanent income by one dollar is 1.04 (1.98) for whites and -.02 (.91) for blacks. The combined effect of increasing y_{it}, y_i of the husband, and y_i of the wife by one dollar is 3.66 for whites and 1.58 for blacks. The point here is that these income derivatives tend to be much larger for white couples than for black couples. The same is true for single males and single females. It also holds when we evaluate the income derivatives at 0.5 or 1.5 of the sample mean instead of at the sample mean. In fact, the gap in the sensitivity of wealth to income is substantially higher above the mean than below the mean.[18]

[18]The effect of a unit increase in current and permanent income is 2.04 for whites and 2.04 for blacks at 0.5 of the pooled sample mean, which is the only exception to the rule of larger marginal effects for whites. At 1.5 of the mean the values are 5.28 for white couples versus 1.12 for black

Although there is some variation across variables (in part because of sampling error), the coefficients on the other variables in the model also tend to be larger in absolute value for whites than for blacks. To establish this point, we computed the indexes $Y_i\hat{\alpha}^w$ and $Y_i\hat{\alpha}^b$ of the income variables for each observation in the combined sample of blacks and whites. The regression of $Y_i\hat{\alpha}^b$ on $Y_i\hat{\alpha}^w$ and a constant is 0.284 with an OLS standard error of 0.0026. A similar regression involving the $X_i\hat{\beta}^w$ and $X_i\hat{\beta}^b$ indexes of the demographic variables shows that differences in demographics have a stronger association with wealth levels for whites than for blacks. The slope coefficient in a regression of $X_i\hat{\beta}^b$ on $X_i\hat{\beta}^w$ and a constant is 0.354 with an OLS standard error of 0.0016. When one forms the index using both income and demographic variables and regresses $Z_i\hat{\theta}^b$ on $Z_i\hat{\theta}^w$ and a constant, the slope coefficient is .305 (.0023). The patterns are very similar for single men and single women, with the exception that for single men the coefficient on the index of income variables is close to 1.

In summary, we find that most or all of the race gap in the wealth level for single men and single women and a substantial portion of the gap for couples would disappear if blacks and whites had the same distribution of income and demographic variables *and* the white wealth equation held for blacks. However, the wealth models for blacks exhibit much less income sensitivity, indicating that both the race gap in income and demographics *and* race differences in the distribution of wealth *conditional* on income and demographic variables play important roles in the gap in wealth levels.[19]

6.2 Ratio Models

In Panel B of Table 3 we present results pertaining to the ratio of wealth to permanent income W_i/y_i. For white couples, the mean of the predicted value of W_i/y_i is 4.18 (0.08), while the corresponding value for black couples is 1.74 (0.10). The total gap

couples. The values for single white males and single black males are 1.00 versus 0.46 at 0.5 of the mean, 1.55 versus .39 at the mean, and 2.11 versus 0.31 at 1.5 times the mean. The values for single white females and single black females are 1.95 versus 0.82 at 0.5 of the mean, 1.75 versus .68 at the mean, and 1.55 versus 0.54 at 1.5 times the mean.

[19] In their wide ranging study of wealth accumulation, Hurst et al. (1998) use the PSID to examine race differences in the level of wealth. Their results are broadly consistent with ours. However, Hurst et al. (1998) do not directly address the question of differences in the form of the wealth function because they pool whites and blacks and only allow the intercept of the wealth model to depend on race. See footnote 17 of Altonji & Doraszelski (2001) for details.

is 2.44 (0.13). Demographic and income characteristics account for 57% of this when we use white coefficients but only 12% when we use the black coefficients. In the case of single males the total gap is 0.70 (0.07). Demographic and income characteristics explain 119% of the gap when we use the white coefficients but only 27% when we use the black coefficients. In the case of single females, the corresponding numbers are 78% and 45%.

6.3 Log Models

In Panel C of Table 3 we report decompositions for $\ln W_i$. The explanatory variables are the same as for the level and ratio models except that we substitute the log of current income and the log of permanent income for the levels of these variables. For couples the mean of the log wealth gap is 1.51 (0.06). Using the wealth model for whites we can explain 77% of this gap. Using the wealth model for blacks we can explain 72%. For single women, the mean of the gap in the log of wealth is 2.57 (0.08). Using the white equation the portion of the gap that is explained by income and demographics is 1.68 (0.10) or 65% of the total. The explained gap based on equation for blacks is also 65% of the total gap. For single men the gap in log wealth is 2.00 (0.10). Using the white equation the portion of the gap that is explained by income and demographics is 1.71 (0.10), or 85% of the total. The explained gap based on the equation for blacks is 1.53 (0.12), or 76% of the total. In percentage terms, the explanatory variables account for more of the race gap in log wealth for single men than for either single women or couples. The 85% figure when the log wealth model for whites is used is particularly striking, and well in excess of the figures reported by Blau & Graham (1990).

6.4 Summary

Overall, income and demographics explain a substantial part of the wealth gap between whites and blacks. Most or all of the race gap in the wealth level for single men and single women and a substantial portion of the gap for couples would disappear if blacks and whites had the same distribution of income and demographic variables *and* the white wealth equation held for blacks. Although the relative explanatory power of the regression models for blacks is higher when W_i/y_i is the explanatory variable than when W_i is the explanatory variable, the results for W_i/y_i are generally

consistent with the results for W_i.

The results based upon the white log model are less dramatic than the results for the white level wealth itself, and the portion of the gap explained using the black model is much larger in case of the log model than in case of the level model. However, this disparity between the log results and the results for levels and ratios should not be overstated. In particular, since the model for $\ln W$ implies a multiplicative model for W, the huge race gap in the mean of log wealth together with the substantial fraction of the gap that is not explained by income and demographics implies that the response of wealth to income and demographic variables is much smaller for blacks than for whites. This point comes through most starkly in the case of single females. From Panel C of Table 3 the total gap in the mean of $\ln W$ is 2.57. The regression models for whites and blacks both explain 65% of this gap, leaving an unexplained gap of .90 ($= .35 \times 2.57$). Consider the most extreme case in which the slope coefficients of the log models for whites and blacks are equal and all of the unexplained gap is due to the intercept. Assume that the distribution of the errors in the log models do not depend on race, income, and demographics. Then for whites the derivative of wealth with respect the income and demographics will be $e^{.90} \approx 2.46$ times the corresponding derivative for blacks.[20] Consequently, the evidence based upon the log models is broadly consistent with the evidence for levels and ratios.

7 Median Regression Results

We measure the wealth gap as the population-weighted average of the difference between the conditional median of wealth based on the median regression for the white sample and the distribution of characteristics in the white sample and the median regression and distribution of characteristics for the black sample, $\hat{W}^w_\bullet - \hat{W}^b_\bullet$. We refer to this as the gap in the conditional median of wealth. Table 4 presents the decompositions. In the case of couples, the total gap in the median is estimated to be 84,794 (2,824), which compares to a gap in the mean of wealth of 116,795 (4,535). The total gap in W/y is 1.81 (0.07) for medians and 2.44 (0.13) for means. The gaps in the median of $\ln W$ and the mean of $\ln W$ are more similar (1.36 (0.05) versus 1.51 (0.06)), which is not surprising given that the log transformation reduces the

[20] If $\ln W_i^b = Z_i^b\theta + \epsilon_i^b$ and $\ln W_i^w = .90 + Z_i^w\theta + \epsilon_i^w$, then $E(W_i^b|Z_i^b) = e^{Z_i^b\theta}E(e^{\epsilon_i^b})$ and $E(W_i^w|Z_i^w) = e^{.90}e^{Z_i^w\theta}E(e^{\epsilon_i^w})$.

skewness of the wealth distribution.

In the case of couples the income and demographic variables account for 68% of the wealth gap in the weighted average of the conditional medians if the median regression function for whites is used (Panel A). In contrast, the median wealth regression for blacks implies that characteristics account for only 22% of the gap in the conditional median of wealth. For single men the white median regression implies that 85% of the gap is explained, while the black median regression implies a figure of only 41%. The corresponding figures for single women are 74% and 42%. Overall, income and demographics account for a somewhat smaller percentage of the race gap in the conditional median of the wealth level than in the conditional mean when the white model is used, particularly in the case of single men and single women. When the median wealth model for blacks is used, the percentage explained is slightly lower than the corresponding value for the conditional mean in the case of couples but higher for single men and women.

The results for W/y in Panel B of Table 4 are similar to the results for levels, except that the portion of the gap explained by the white median regression model is substantially smaller for both couples and single females.

The results for $\ln W$ in Panel C of Table 4 are basically similar to the results based on mean regression and also imply that the wealth of whites is much more sensitive to income and demographics than the wealth of blacks once the implications of the log specification and the large unexplained gap are taken into account.

8 Self Employment and the Wealth Gap

If causality runs mainly from self employment to wealth, then it is desirable to control for self employment in the analysis, especially to the extent that the effects of past discrimination on the self-employment rate of blacks lingers today (see for example the discussion in Bates (1997) and Oliver & Shapiro (1997)). However, some studies of the race gap in self employment attribute part of the self-employment gap to a lack of financial capital. If the causality runs from wealth to self employment, then it is less clear that self employment should be controlled for.

The coefficient on self employment is quite substantial. In the case of white couples, the coefficients on the dummies for self employment of the head and self employment of the spouse are 150,010 and 47,916 respectively in the model for wealth

levels. The corresponding coefficients in the model for blacks are 57,415 and -3,784. The combination of a much higher self-employment rate for whites (.18 versus .05 in the case of heads and .08 versus .03 in the case of spouses) and a much stronger association between self employment and wealth for whites make a substantial contribution to the race gap in wealth. When we remove the self-employment indicators from the wealth model for couples, the fraction of the gap in W explained using the white wealth model declines from 79% to 64%. The fraction of the gap in W/y explained declines from 57% to 41%.[21] Differences in self-employment rates make a much smaller contribution to the wealth gap for single males and single females. The percentage of the gap in W explained using the white wealth model is 114% for males and 100% for females even when self employment is excluded. Overall, the evidence suggests that race differences in self-employment patterns are a significant part of a full explanation of black/white wealth differences, although causality is ambiguous.

9 Alternative Samples and Evaluation Points for the Wealth Gap

Thus far we have reported decompositions of the wealth gap using the full distribution of the income and demographic variables for the white and the black populations to estimate and evaluate the models. In this section we explore the possibility that a lack of overlap between the white and black samples is leading to unreliable estimates, particularly when the black coefficients are used with white characteristics, because we are extrapolating too far out of sample.

First, we performed decompositions at the sample means of the explanatory variables for whites and the sample means for blacks rather than using the full distribution for each group. As discussed in Section 8 of Altonji & Doraszelski (2001) we continue to find a large difference between the black and white equations in the role assigned to differences in characteristics. This means that the right tail of the distribution of current income and/or permanent income is not driving our results.

Second, we tried the novel approach of selecting comparison groups on the basis of the estimated standard errors of the conditional mean of wealth given the explanatory variables from the two equations. The basic idea is that persons with low standard

[21] The corresponding values with and without self employment when the black wealth models are used are 25% and 19% for W and 12% and 5% for W/y.

errors have characteristics that are closer to the center of the multivariate distribution of the observable variables that matter for wealth. We use the estimate of the variance matrix of the black coefficient estimates to calculate prediction errors for each white sample member and then pick the ones that have the lowest estimated prediction error. Blacks are treated analogously. There is a tradeoff between reduction in sample size for the comparisons and the objective of focusing on whites who fall within the distribution of characteristics of blacks, and vice versa. Somewhat arbitrarily, we chose 50% as the percentage of the white and the black samples to keep for the wealth decompositions. (The model estimates are based on the full samples.) The results are presented in Table 5 of Altonji & Doraszelski (2001). They confirm our basic finding that differences in the white and black wealth models play a key role in the wealth gap.

Third, we address the possibility that the effects of current and permanent income on wealth is not quadratic over the full range of the distribution of whites and blacks. If it is not, then the difference in the income distributions of whites and blacks might lead to bias when we evaluate the black regression function using the white sample, and vice versus. Since there is every reason to believe that wealth would be a smooth function of income, adding additional polynomial terms should provide an adequate solution. When we add third powers in current and permanent income, our decompositions based on the white wealth model are not affected very much. However, the decompositions based on the black wealth model become quite imprecise in the case of single women. There is not enough overlap in the income distributions at the high end, a least not given the other covariates in the model. (See Section 7.1 of Altonji & Doraszelski (2001) for details.)

As a final robustness check we start with the trimmed sample and prior to estimation of the wealth models eliminate observations if current income is negative or if permanent income is less than 100. We also eliminate observations for whites with current or permanent income above the corresponding 98th percentile values of in the black sample. In the case of couples, we screen on the basis of both the husband's permanent income and the wife's permanent income.[22] We include cubics in both current income and permanent income. The gap in W is 85,644, which is below the gap of 116,795 in the full sample because we have chosen whites who fall more

[22]The distributions of the head's permanent income (in thousands) in the restricted samples are as follows:

within the income distribution of blacks. Income and demographics explain 64% of the gap between whites and blacks using the white wealth model and 26% using the black wealth model. The comparable figures for single males are 135% and 19% and 97% and 28% for single females. The comparable figures for W/y are 50% and 19% for couples, 142% and 25% for single males, and 61% and 36% for single females. We obtain very similar results using a quadratic specification. We also obtain very similar results if we restrict the white sample to lie below the maximum values of current and permanent income in the black sample rather than the 98th percentile values. Overall, the results are quite similar to those in Table 3, especially when one accounts for the fact that eliminating high income whites reduces potential size of the explained gap.

Barsky et al. (2002) take a nonparametric approach to addressing the potential for bias from misspecification of the relationship between wealth and income in the presence of differences in the white and black income distributions. They adjust for differences in income by reweighting the observations on whites to have the same income distribution as the black sample and find that differences in income account for 64% of the wealth gap. In contrast, when they use a quadratic specification they explain 72% of the gap using the model for whites. (They do not report results for the cubic case. The nonparametric regression functions they report would appear to be well approximated by a cubic.) This difference is not negligible, but given sampling error we do not consider it to be a clear indication of a problem with our parametric approach. Their estimate of the gap explained is below most of our estimates for the wealth level. However, while space prevents a full discussion of the differences between their study an ours, it is important to note that they pool family types without intercept or slope shifts and only control for permanent earnings and age, while we treat married couples, single men, and single women separately and also control for current income, self employment status, education, and a rich set of demographic characteristics and use non-asset income rather than earnings as our resource measure. Barsky et al. (2002) argue that there are not enough

	min	1%	10%	25%	50%	75%	90%	99%	max
white couples	1	17	28	34	41	49	56	63	65
black couples	5	11	17	22	30	39	48	68	97
single white males	7	16	25	30	37	43	48	52	52
single black males	5	11	16	20	25	31	39	61	87
single white females	11	15	22	27	33	38	42	44	45
single black females	7	11	15	19	23	28	35	48	69

blacks at the high end of the white income distribution to ask whether differences in characteristics explain less of the gap when the black wealth function is used. Our sample is much larger than theirs. Our robustness checks above suggest strongly that in our samples overlap in the distributions is sufficient to permit decompositions using the black wealth model, particularly if one restricts the range of income variation in the white sample. The discrepancy between the white and black wealth models in the importance of income and demographic variables appear to be real rather than an artifact caused by inaccurate extrapolation out of sample. However, further research on this key issue is needed.

10 Race Differences in the Components of Wealth

Why are the coefficients so different across the black and white specifications? One hypothesis is that the relationship differs for some forms of wealth but not for others. Table 5 reports mean regression decompositions of main home equity (house value net of mortgage balance), wealth in farms/businesses, and stocks/mutual funds and IRAs. We restrict attention to couples. The regressors are the same as the ones used for couples in our other wealth models.

On average whites hold 32,309 (978) more home equity than blacks (56,859 (657) versus 24,550 (724), Panel A of Table 5), which is not surprising given the difference in home ownership rates across races.[23] The white regression model explains 88% of this gap compared to the 79% explained for total wealth in Table 3. Again, the amount explained using the model for blacks is much smaller – only 30%.

The unconditional black/white difference in asset holdings relative to the mean for either group is significantly larger for business wealth and stocks. The wealth model for whites explains only 73% of the gap in farm/business wealth even though self-employment status of the husband and wife are controlled. Once again, the fractions explained by the black regression equation are negligible – only 18%.

In the case of stocks, the mean for whites and blacks are 23,290 (915) and 2,670 (314) respectively. The total gap of 20,620 (1,558) is 7.7 times the mean for blacks. We can attribute 88% of the difference in stock to income and demographic characteristics

[23]Charles & Hurst (2002b) provide evidence that differences between blacks and whites in the ability and willingness of parents to provide a downpayment plays a role in the lower transition rate from rental status to home ownership for blacks. Segal & Sullivan (1998) study the role of race, other demographic variables, and income in trends in home ownership.

when we use the wealth model for whites but only 20% of the difference when we use the black wealth model. The gap in this component is particularly important given the equity premium. Even if blacks and whites received the same return on any given asset, the fact that equity is underrepresented in the portfolios of black couples suggests that overall returns are lower for blacks.

We obtain qualitatively similar results for the ratios of the various wealth components to permanent income of the head, although the explanatory power of both the white wealth model and the black wealth model is lower for W/y (Panel B of Table 5).

Overall, the results for the components of wealth closely parallel the results for total wealth.

11 Intergenerational Transfers and the Wealth Gap: Evidence for Siblings

Our results show substantial differences in the sensitivity of wealth holding to income and demographic variables. Because both income and demographic characteristics of whites are more conducive to wealth holding, we assign higher fractions of the wealth gap to differences in income and demographics when we use the white wealth equations. There are at least three possible explanations for why wealth holding may be more sensitive to characteristics for whites than for blacks. First, whites may enjoy a higher rate of return on assets, in which case the same level of savings and intergenerational transfers would lead to larger wealth levels, magnifying underlying differences that are associated with income and demographics. Menchik & Jianakoplos (1997) provide some limited evidence that blacks experience a lower rate of return on assets of a given type. However, the evidence on this point is far from conclusive (see also Gittleman & Wolff (2001)). Second, savings of blacks may be less sensitive to the income and demographic variables that we use. Third, inheritances of housing, financial assets and businesses and/or inter vivos transfers are larger among whites than among blacks because slavery and the legacy of racial discrimination have inhibited the accumulation of wealth in the black population.[24] Studies by Smith (1995), Avery & Rendall (1997), Menchik & Jianakoplos (1997), and Gittleman & Wolff (2001)

[24]See Oliver & Shapiro (1997) for a historical overview of legal and social barriers to wealth holding by blacks.

indeed suggest that differences in inheritances explain part of the race gap, although none of these studies pays much attention to the fact that there are large discrepancies between whites and blacks in the sensitivity of wealth holding to income and demographics.[25]

In this section we use data on siblings to explore the possibility that differences in intergenerational transfers are the source of differences in wealth holding. Using siblings largely neutralizes the effects of differences between whites and blacks in inter vivos transfers and inheritances and provides a way of controlling for the effects of adverse history on the position of blacks relative to whites with similar income and demographics.[26]

11.1 Econometric Models

Let k index families and i siblings within a family. We estimate models of the form

$$W^j_{kit} = \alpha^j_0 + Y^j_{kit}\alpha^j + X^j_{kit}\beta^j + u^j_k + \epsilon^j_{kit}, \quad j = b, w, \tag{4}$$

where u^j_k is a family-specific fixed effect. For reasons that will become clear later, we have made the wealth survey year subscript t explicit. If inheritances and inter vivos transfers are correlated with average income and demographic characteristics of the siblings, then u^j_k will be correlated with Y^j_{kit} and X^j_{kit}. Since inheritances and transfers are larger for whites than blacks, the resulting bias may be larger for whites. By controlling for factors that are common to siblings, we reduce this problem.

To see how historical barriers to wealth holding faced by blacks affect the estimated slopes of wealth models and how fixed effects models reduce the influence of these barriers, consider the following simple model of inheritances and inter vivos transfers. Suppose that in a steady state the wealth of parents, including inheritances and

[25] A fourth possibility is that blacks face higher prices than whites. In this case, our measure of real income is overstated for blacks. However, the available evidence suggests that consumer prices are not very different for blacks than for whites (Richburg Hayes 2000).

[26] The coefficients in the sibling equations will be downward biased to the extent that parents try to compensate for differences in income of children. However, Menchik (1980), Menchik & David (1983), Wilhelm (1996) and other studies show that inheritances are evenly split in about 70% of the cases and that the division is only weakly related to income in the cases where the split is not even. Inter vivos transfers among siblings tend to compensate for income differences, but the coefficient relating transfer amounts to income differences is relatively small. See McGarry & Schoeni (1995) and Altonji, Hayashi & Kotlikoff (1997) for evidence.

accumulated savings, is related to permanent income y according to

$$W_0 = \alpha y_0,$$

where we have suppressed family and survey year subscripts and use the subscript 0 to denote the parents. Suppose also that parents pass on the fraction ϕ of their wealth. Furthermore, assume that the relationship between the permanent incomes of parents and children is

$$y_0 = \rho y_1, \quad \rho > 0,$$

where the subscript 1 denotes the child. For whites, the child's wealth is the sum of savings out of gifts and inheritances and savings out of income,

$$W_1 = s(\phi W_0 + g y_1) = (s\alpha\phi\rho + sg) y_1,$$

where g converts permanent income into the discounted sum of lifetime income and s is the savings rate. Suppose that slavery and discrimination severely limited the ability of blacks to accumulate wealth. Then the relationship between wealth and permanent income of the black parents can be modelled

$$W_0 = d(\alpha y_0), \quad 0 < d < 1,$$

where d reflects the effect of discrimination. Hence, the equation relating wealth to income for blacks is

$$W_1 = s(\phi W_0 + g y_1) = (s\alpha\phi d\rho + sg) y_1.$$

The coefficient $(s\alpha\phi d\rho + sg)$ on y_1 in the above equation for blacks is smaller than the coefficient $(s\alpha\phi\rho + sg)$ for whites. However, once the effect of parental wealth is held constant using a family-specific fixed effect, the influence of the term $s\phi W_0$ is eliminated and the coefficient on y_1 is sg for both whites and blacks. A similar argument can be made for intergenerational links in demographic patterns. Hence, if the analyses with and without fixed effects give similar answers, then we can conclude that race differences in gifts and inheritances that are correlated with income and demographic variables do not explain our finding that wealth levels are more sensitive

to income and demographic variables in the case of whites than in the case of blacks.[27]

11.2 Results

To obtain adequate sample sizes, we pool observations on single men, single women, and couples and add control variables for the three demographic groups. For couples we use only the head's variables rather than separate variables for the husband and the wife. We do not weight observations in computing the decompositions.

When one includes a family fixed effect, the effects of permanent income are identified only by cross-sibling variation, but the effects of current income, self-employment status, marital status, the number of children, and other explanatory variables that change over time are identified by a mix of cross-sibling variation and cross-time variation. OLS without fixed effects uses cross-family, cross-sibling, and cross-time variation. One might argue that cross-person variation should have a stronger relationship with wealth than cross-time variation. Moreover, for the purpose of explaining the race gap in wealth the effects of permanent differences are more important than transitory differences. For this reason, we also examine estimates that emphasize cross-sibling variation. A simple way to use only cross-sibling variation in the key income and demographic variables is to estimate the wealth model after taking person means across wealth surveys for all of the variables. However, with time averaging it becomes difficult to distinguish the effects of current and permanent income, and much variation in variables such as the survey year dummies and age is lost.

To save space, we do not report the detailed regression estimates. However, it is interesting to note that although the race gap in the effect of income on wealth is a little smaller for FE than OLS it is somewhat larger for FE-Means than OLS.[28]

[27] An alternative strategy is to add controls for the permanent income and wealth of parents. Conley (1999) controls for such variables in a model for the log of wealth and finds that he can explain the entire wealth gap. However, his analysis is likely to overestimate the effects of parental income and wealth because he excludes permanent income measures for the adult children and ignores the effects of unobserved family specific heterogeneity in savings behavior. Furthermore his sample size is very small and contains similar percentages of whites and blacks who are self employed (in contrast to a huge literature and the evidence in Table 2). Also, he works with a pooled regression model and reports standard errors that are so large that the results are not very informative. Further research incorporating parental wealth is needed.

[28] The fixed effect estimate of the marginal effect of a one dollar increase in both current income and permanent income is 1.49, 2.26, and 2.82 when both are set to 0.5, 1.0, and 1.5 times their respective means for the pooled sibling sample. The corresponding fixed effects estimates for blacks are 0.78, 1.62 and 2.46. The corresponding FE-Means estimates are 1.30, 2.02 and 2.73 for whites and .98, .99 and .99 for blacks. The corresponding OLS estimates are 1.77, 2.32 and 2.88 using the

Overall, there is not much evidence that race differences in the correlation between income and inheritances plays a large role in the stronger relationship between income and wealth for whites.

There is an interesting pattern in coefficients on self employment. The OLS and FE estimates of the effect of self employment are 70,013 and 49,116 for whites. The OLS-Means and FE-Means estimates are 85,232 and 60,751. Both reporting error and the fact that successful businesses are longer lasting may underlie the fact that the estimates are larger when we work with individual means. The fact that the estimates decline when sibling fixed effects are included is consistent with a role for inheritances in the effects of self employment but it may also be due to a greater role for reporting error. The OLS and FE estimates for blacks are 14,230 and 11,854 and the OLS-Means and FE-Means estimates are 12,116 and 9,804. Thus, adding family fixed effects closes the race gap in the link between self employment and wealth from 73,116 to 50,948 when individual means are taken and from 55,783 to 37,262 when means are not taken. Overall, the self-employment results for siblings confirm our earlier results suggesting that self employment may play a substantial role in the wealth gap. The comparison of the estimates with and without fixed effects suggests that parental wealth or other family background factors can explain about one third of the huge race gap in the relationship between self employment and wealth.[29]

In Table 6 we report decompositions of the wealth gap using the siblings sample using FE and FE-Means estimates of the wealth models. For purposes of comparison, we also report OLS and OLS-Means estimates. The results are quite striking. For the wealth level we explain 111% and 54% of the gap using the white coefficients and the black coefficients, respectively, using OLS, 104% and 49% using FE, 107% and 36% using OLS-Means, and 97% and 23% using FE-Means. Basically, the FE and FE-Means results closely correspond to the results without fixed effects, and mirror the pattern we obtained above for the samples of couples, single females, and single males. We continue to explain more of the wealth gap using the white coefficients than the black coefficients, particularly when wealth and income are specified in levels. The W/y results are very similar to the W results.[30] If anything, the gap in the fraction of

white model and .89, 1.52 and 2.15 using the black model.

[29]Fairlie & Meyer (2000) consider estimates of intergenerational links in self employment and conclude that most of the racial discrepancy in self-employment rates is due to "forces that reduce current black self employment besides the initial conditions of low black self employment." Dunn & Holtz-Eakin (2000) find that parental wealth has a small direct effect on self employment of sons.

[30]The fixed effects results for $\ln W$ are also similar to our earlier results in Table 3.

wealth explained using the black wealth model and the white wealth model is larger when we use cross-sibling variation to eliminate the effects of common inheritances and transfers. There is little evidence that differences in factors such as inheritances or inter vivos transfers that are likely to vary across families provide an explanation for the racial difference in the sensitivity of wealth to income and demographics. We wish to stress, however, that they may play a role in differences in wealth intercepts and appear to matter for self employment. This leaves differences in savings behavior and/or rates of return as potential sources of the race difference in wealth models. We examine them in the next section.

There is an important caveat to our analysis. The additively separable form of equation (4) is standard in the literature, but may not be adequate if income and inheritances interact in the wealth function, as would be the case if there is a strong bequest motive. The results for W/y are less subject to this objection.[31]

12 Race Differences in the Growth of Wealth

We now turn to models of wealth accumulation. In Table 7 we present unweighted means and standard deviations of the measures of the 5 year changes in wealth for couples. The 5 year changes reflect the growth in wealth between the 1984 and 1989 surveys or between the 1989 and 1994 surveys. We focus on the trimmed statistics the last two columns. These show a much more rapid rate of accumulation for whites than for blocks. For example, the mean 5 year change in W/y is 1.28 (3.71) for whites but only 0.45 (2.11) for blacks, a gap of 0.83. The large difference could reflect differences in savings, differences in rates of return on assets, or a combination of the two. Table 7 also reports the mean growth rates for some categories of wealth. There are dramatic differences between whites and blacks in growth of housing wealth and especially in stock/mutual funds/IRAs and in business wealth.

We now turn to the issue of how much of the difference in accumulation rates can be explained by differences in income and demographics. The growth models include the variables that appear in the wealth models plus the changes in the measures of current income, region, SMSA, wife's work hours, children, dependents, health status, and self employment. To insure reasonable sample sizes we confine the analysis to

[31] Altonji & Matzkin (2001) provide a panel data estimator for nonseparable models that could be used to address the issue.

couples. We focus on total wealth because the precision for the components is not sufficiently large. We do not weight observations in computing the decompositions.

The wealth change decompositions are reported in Table 8. In the case of W, income and demographic variables explain 74% of the difference in accumulation rates when the accumulation model for whites is used. Using the accumulation model for blacks, the same factors explain 49% of the gap. The corresponding figures for growth in the wealth/permanent income ratio, W/y, is 84% based on the white accumulation model and 30% based on the black accumulation model. In summary, we find that income and demographic characteristics explained more of the gap in wealth accumulation when the wealth model for whites is used.

What is responsible for the substantial difference between blacks and whites in the sensitivity of wealth levels and wealth/permanent income ratios to income and demographic variables? Difference in the rate of return to wealth may be part of the story, because blacks have larger percentages of their wealth in home equity and smaller percentages in stocks and business wealth. However, the differences seem too great to be attributable to differences in rate of return alone although further research on this issue is needed. The wealth change regressions suggest that differences in savings rates are an important factor. Recall that our sibling results show that inheritances and gifts are not a major factor in the black/white differences in the wealth models. This fact, in combination with the substantial race differences in the wealth growth models, suggests that differences in savings behavior (possibly in combination with rates of return) may be an important source of the wealth gap and of black/white differences in the wealth models.[32]

Note that the results for logs in Panel C of Table 8 present a challenge to the above interpretation. The results for logs show that 77% of the wealth is explained when the black wealth growth model is used while only 5% of the gap is explained when the white log wealth growth model is used. These results are not consistent with the results in Panels A and B and cannot be attributed to the fact that the log model is basically a multiplicative specification. We do not have a good explanation for this, but note that many of the coefficients in the model are poorly estimated and

[32]We have also estimated equations for W that include a lagged value of W along with the other variables used in the savings regressions. However, given the presence of lagged wealth, the high explanatory power of the models is largely due to the race gap in lagged wealth, and so it is hard to know what the economic significance of the explained gap is. See footnote 29 of Altonji & Doraszelski (2001) for details.

the explanatory power of both the white model and black model is low. In general, the low explanatory power of the growth models makes us cautious in interpreting the decompositions, especially in the case of the models for blacks.[33]

In independent work, Gittleman & Wolff (2001) analyze race differences in wealth accumulation using PSID data similar to ours. They allocate the growth in wealth to the effect of portfolio mix on asset returns, asset returns given portfolio allocations, savings rates, inheritances, income, and household composition changes. They distinguish between savings and asset returns by constructing a specific measure of savings from questions about "active savings", while we use wealth changes without attempting such a decomposition. They pool household types, use a much more limited set of regressors, and measure income differently. They find that race differences in savings rates are entirely explained by differences in income and demographic differences. Because they pool whites and blacks and use population weights, their regression estimates should be close to those for the white sample. Thus, their results for savings are qualitatively consistent with our results for the change W/y, although we only explain 84% of the gap in the change in W/y.

13 Conclusions and Further Questions

We study the sources of the huge wealth disparity between blacks and whites using improved income and demographic measures. When we use the level of wealth as the dependent variable we explain a large part of the racial disparity in wealth holdings with income and demographic variables provided that we estimate the wealth model on a sample of whites. On the other hand, we can explain only a small fraction of the race gap when we ask the question: If the relationship between wealth and income and demographics for whites was the same as it is for blacks, how much wealth would whites hold? The reason is that the regression coefficients relating income and demographic characteristics to wealth are in general much smaller for blacks. This implies that less of the race gap in wealth is explained by the race gap in income and demographics. Our results are robust to a number of modifications to the estimation methodology, functional form, and comparison groups.

[33]The adjusted R^2's of the growth models are only about .05 for the growth in $\ln W$. The adjusted R^2 is .0946 for whites and .0458 for blacks when the dependent variable is the growth in W/y and .3023 for whites but only .0607 for blacks when the dependent variable is the growth in W.

We find that a higher self-employment rate and a stronger link between self employment and wealth for whites than for blacks make an important contribution to the wealth gap between white and black couples. Separate analyses of the major components of wealth confirm our findings for total wealth. Again wealth holdings of whites are much more sensitive to income and demographics than wealth holdings of blacks. Overall, our results suggest that race differences in the sensitivity of wealth to income and demographics may be as important as the gap in income and demographics themselves in understanding black/white differences in wealth.

What underlies the substantial race differences in the sensitivity of wealth holding to income and demographics? To answer this question we analyze data on siblings from the PSID. Our study is the first (to our knowledge) sibling fixed-effects analysis of wealth holdings and is of independent interest. The fact that we obtain similar results when we relate sibling differences in wealth to sibling differences in income and demographics suggests, perhaps surprisingly, that differences in inter vivos transfers and inheritances are not the main reason the wealth model coefficients differ by race. This would seem to leave race differences in savings behavior and/or rates of return as a default explanation.

We find that income and demographic differences explain a substantial part of the difference between whites and blacks in the growth in the level of wealth and in the ratio of wealth to permanent income when we use the wealth model for whites, but relatively little when we use the wealth model for blacks. This result suggests important differences between whites and blacks in the effects of income and demographics on savings and/or rates of return, although our conclusion is tentative for a number of reasons discussed above. We suspect that differences in savings behavior is the main factor. However, the fact that blacks hold disproportionately low fractions of their portfolios in stocks and business wealth suggests that differences in rates of return may also play a role.

A large research agenda remains. Further descriptive explorations of the race gap in wealth holdings and wealth accumulation using other data sets and other econometric approaches are needed. However, more detailed studies of the underlying causes of race differences in wealth accumulation behavior are also needed. We close by sketching a few possibilities.

Our sibling approach to the study of the effects of parental resources on the wealth models should be augmented by a study of the sources of intergenerational links in

wealth along the lines of recent work by Charles & Hurst (2002a). The role of self employment and small business formation has already received a substantial amount of attention in the literature and deserves more.

A second possibility is that differences in permanent income in conjunction with lower life expectancies among blacks and a higher replacement rate of private income with publicly provided social security and health benefits depress the incentive to save for retirement of blacks relative to whites, as discussed by Smith (1995).[34] Differences in life expectancy may also play a role, although we suspect it to be minor.

A third possibility revolves around the implications of differences in the income distributions of the friends and relatives of whites versus blacks. The basic idea is that savings and wealth accumulation are influenced by economic links to other household and friends that are motivated by altruism or other factors. The effects of ties to other households on savings depends on the level and distribution of resources and needs. We know that wealth accumulation is highly nonlinear in income. An explanation for this is that the marginal utility of household consumption declines in spending, leading households to accumulate resources as a hedge against future consumption needs, fluctuations in income, and uncertainty about the lifespan. Unspent resources are left to children or to charity late in life or upon death. However, if a high income family has strong ties to needy relatives and friends, it may make transfers rather than accumulate wealth. Also, social pressure on the relatively well off to provide assistance may be stronger in communities where needs are greatest. This will reduce the private incentive to accumulate for those who are not very altruistic. The net result may be that the wealth of a household with an extensive network of needy family members and friends may increase less with income than the wealth of a household with a network of well off friends and relatives.

Finally, the lower incomes of black households and of their friends and relatives may lead to greater dependence on social transfer programs relative to own resources and private transfers, holding permanent income and other household characteristics constant. Eligibility requirements for many transfer programs, including welfare programs and public housing, discourage wealth accumulation. This may reduce the private incentive to accumulate wealth.[35]

[34]In preliminary work using the Health and Retirement Survey (HRS), John Karl Scholz (University of Wisconsin, Madison) has found that the race gap is much smaller for pensions than other forms of wealth (personal communication). This could have spillovers into holding of assets.

[35]See Powers (1998), Gruber & Yelowitz (1999), and Hurst & Ziliak (2001) for direct empirical

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Table 1: Descriptive statistics for wealth and income variables

	White Couples (std. dev.)		Black Couples (std. dev.)		Single White Males (std. dev.)		Single Black Males (std. dev.)		Single White Females (std. dev.)		Single Black Females (std. dev.)	
Log of wealth including main home equity	10.97	11.37	9.48	10.23	8.95	9.56	7.25	7.78	9.19	10.03	6.88	6.91
	(2.11)		(2.35)		(2.76)		(2.82)		(2.80)		(2.88)	
Wealth including main home equity	211602	86764	53472	27611	62211	14224	15439	2387	70599	22676	15099	1004
	(627938)		(140253)		(153775)		(38141)		(208029)		(40543)	
Ratio of wealth including main home equity to permanent income	4.87	2.23	1.80	0.89	1.33	0.32	0.58	0.07	2.04	0.59	0.66	0.04
	(11.26)		(4.36)		(3.12)		(1.68)		(7.50)		(1.88)	
Value home	70082	50202	38129	25101	50050	34305	29543	23000	57438	40000	30737	23869
	(78227)		(60736)		(58305)		(22066)		(158915)		(39325)	
Value farm/business	191367	47738	60075	35804	70205	16734	46366	6694	80793	35804	25758	9548
	(548572)		(198798)		(128588)		(160601)		(114727)		(31834)	
Value stock/mf/ira	68914	15061	26837	9548	33783	7000	8623	4774	38816	10000	8851	3580
	(293569)		(51006)		(120410)		(11312)		(76743)		(14906)	
Value home (incl. 0)	58462	40162	25293	13128	18335	0	6475	0	27534	0	9157	0
	(76053)		(52647)		(42741)		(16002)		(113707)		(25658)	
Value farm/business (incl. 0)	39149	0	2689	0	8195	0	990	0	4375	0	103	0
	(259850)		(43853)		(49379)		(24411)		(32359)		(2592)	
Value stock/mf/ira (incl. 0)	27589	0	4073	0	8619	0	581	0	9138	0	519	0
	(188793)		(22080)		(62578)		(3646)		(40715)		(4164)	
Ratio of value of home to permanent income	1.78	1.35	1.38	0.99	1.12	0.71	1.13	1.00	1.70	1.18	1.43	0.99
	(1.83)		(1.63)		(1.33)		(0.90)		(8.11)		(2.11)	
Ratio of value of farm/business to permanent income	3.95	1.15	1.63	1.00	1.64	0.35	2.00	0.25	2.57	1.06	1.23	0.57
	(10.01)		(3.47)		(3.26)		(7.84)		(3.89)		(1.81)	
Ratio of value stock/mf/ira to permanent income	1.37	0.34	0.69	0.24	0.61	0.14	0.28	0.12	1.08	0.24	0.32	0.11
	(3.30)		(1.23)		(1.53)		(0.39)		(2.23)		(0.61)	
Ratio of value home (incl. 0) to permanent income	1.48	1.05	0.92	0.46	0.41	0.00	0.25	0.00	0.82	0.00	0.43	0.00
	(1.80)		(1.48)		(0.97)		(0.63)		(5.68)		(1.33)	
Ratio of value farm/business (incl. 0) to permanent income	0.81	0.00	0.07	0.00	0.19	0.00	0.04	0.00	0.14	0.00	0.00	0.00
	(4.80)		(0.81)		(1.23)		(1.18)		(1.08)		(0.14)	
Ratio of value of stock/mf/ira (incl. 0) to permanent income	0.55	0.00	0.10	0.00	0.16	0.00	0.02	0.00	0.26	0.00	0.02	0.00
	(2.20)		(0.54)		(0.82)		(0.12)		(1.18)		(0.17)	
Whether home	0.83	1.00	0.66	1.00	0.37	0.00	0.22	0.00	0.48	0.00	0.30	0.00
Whether farm/business	0.20	0.00	0.04	0.00	0.12	0.00	0.02	0.00	0.05	0.00	0.00	0.00
Whether stock/mf/ira	0.40	0.00	0.15	0.00	0.26	0.00	0.07	0.00	0.24	0.00	0.06	0.00
Log of taxable non-asset income	10.35	10.43	10.06	10.20	9.68	9.80	9.12	9.33	9.27	9.30	8.92	8.96
	(0.80)		(0.78)		(0.90)		(1.07)		(0.88)		(0.90)	
Permanent log-income	10.72	10.75	10.32	10.42	10.56	10.65	9.91	10.02	10.52	10.57	9.94	9.95
	(0.49)		(0.54)		(0.57)		(0.72)		(0.56)		(0.63)	
Total taxable non-asset income	41519	34000	30153	26783	22452	17978	14204	11283	14618	10942	10590	7784
	(43788)		(19985)		(19181)		(11887)		(26781)		(8844)	
Permanent income	46949	43655	32450	30357	45317	42818	28413	27217	38939	37138	25045	23843
	(20613)		(12747)		(17643)		(9683)		(13731)		(7872)	
Spouse: Permanent log-income	10.66	10.70	10.25	10.37								
	(0.49)		(0.56)									
Spouse: Permanent income	43097	39418	30086	27790								
	(22636)		(13681)									
Number of observations	7700		2509		1415		1130		2744		3178	
from 1984 wealth survey	2561		910		442		335		898		1036	
from 1989 wealth survey	2777		931		502		426		912		1090	
from 1994 wealth survey	2362		668		471		369		934		1052	
Number of couples/singles	3444		1280		924		701		1562		1587	

Notes: Computed from the pooled sample using weights. The weights are normalized so that for each subgroup the means are estimates of the average of the population means for 1984, 1989, and 1994. We show the mean (left), median (right), and standard deviation for each variable by demographic group. "Value of stock/mf/ira" refers to the value of shares of stock in publicly held corporations, mutual funds or investment funds, including stocks in IRAs. The definition of permanent income is given in the text.

Table 2: Descriptive statistics for demographic variables

	White Couples (std. dev.)	Black Couples (std. dev.)	Single White Males (std. dev.)	Single Black Males (std. dev.)	Single White Females (std. dev.)	Single Black Females (std. dev.)
Northeast region	0.23	0.15	0.22	0.15	0.22	0.14
Midwest region	0.29	0.18	0.29	0.22	0.28	0.23
South region	0.30	0.60	0.28	0.54	0.28	0.53
West region	0.18	0.07	0.22	0.09	0.21	0.10
SMSA	0.48	0.64	0.55	0.73	0.57	0.71
Spouse: Annual hours worked	935.83	973.32				
	(931.97)	(956.57)				
Age	48.03	47.64	40.99	38.66	53.09	43.87
	(15.16)	(15.45)	(17.57)	(14.61)	(20.59)	(17.29)
Spouse: Age	45.41	44.53				
	(14.69)	(14.57)				
Number of kids in FU	0.92	1.21	0.11	0.18	0.37	1.04
	(1.13)	(1.34)	(0.46)	(0.58)	(0.82)	(1.28)
Whether kids in FU	0.49	0.58	0.07	0.11	0.21	0.53
Number of dependents outside FU	0.25	0.29	0.35	0.56	0.15	0.10
	(0.77)	(0.93)	(0.80)	(1.02)	(0.62)	(0.42)
Whether dependents outside FU	0.14	0.15	0.21	0.30	0.09	0.07
Health: fair or poor	0.14	0.30	0.16	0.26	0.25	0.31
Spouse: Health: fair or poor	0.12	0.28				
Education: grade school	0.08	0.18	0.07	0.12	0.13	0.15
Education: high school incomplete	0.13	0.19	0.14	0.20	0.16	0.28
Education: high school diploma	0.24	0.28	0.22	0.29	0.28	0.25
Education: high school diploma plus	0.29	0.24	0.32	0.30	0.26	0.25
Education: college degree	0.17	0.06	0.17	0.08	0.11	0.05
Education: advanced or professional degree	0.10	0.05	0.08	0.01	0.06	0.02
Spouse: Education: grade school complete	0.05	0.09				
Spouse: Education: high school incomplete	0.12	0.24				
Spouse: Education: high school diploma	0.36	0.27				
Spouse: Education: high school diploma plus	0.28	0.29				
Spouse: Education: college degree	0.13	0.05				
Spouse: Education: advanced or professional degree	0.06	0.05				
Number of marriages	1.18	1.12	0.64	0.55	0.97	0.71
	(0.49)	(0.42)	(0.72)	(0.67)	(0.75)	(0.65)
Spouse: Number of marriages	1.18	1.12				
	(0.47)	(0.45)				
Tenure of current marriage	21.81	20.54				
	(15.31)	(14.87)				
Most recent marriage ended in widowhood			0.10	0.10	0.36	0.21
Most recent marriage ended in divorce			0.31	0.18	0.28	0.24
Number of children born or adopted	2.43	2.86	1.11	1.76	2.00	2.61
	(1.67)	(2.31)	(1.67)	(2.11)	(2.00)	(2.37)
Spouse: Number of children born or adopted	2.42	2.85				
	(1.65)	(2.41)				
Self-employed	0.18	0.05	0.10	0.05	0.05	0.02
Spouse: Self-employed	0.08	0.03				
Number of siblings	2.30	3.73	2.32	3.63	2.56	3.78
	(2.65)	(3.96)	(2.71)	(3.99)	(2.91)	(4.02)
Spouse: Number of siblings	2.26	3.62				
	(2.65)	(3.76)				
Number of observations	7700	2509	1415	1130	2744	3178
from 1984 wealth survey	2561	910	442	335	898	1036
from 1989 wealth survey	2777	931	502	426	912	1090
from 1994 wealth survey	2362	668	471	369	934	1052
Number of couples/singles	3444	1280	924	701	1562	1587

Notes: Computed from the pooled sample using weights (see Table 1). "SMSA" refers to standard metropolitan statistical area, "FU" refers to family unit.

Table 3: Mean regression decompositions of the race gap in wealth

	White coefficients		Black coefficients				
Demographic group	**White characteristics (standard error)**	**Black characteristics (standard error)**	**Black characteristics (standard error)**	**White characteristics (standard error)**	**Total gap (standard error)**	**Explained gap using white coefficients (standard error, percent)**	**Explained gap using black coefficients (standard error, percent)**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**
A. Wealth measure: Level of wealth							
couples	166708	74119	49912	78921	116795	92589	29009
	(3344)	(4280)	(3064)	(6335)	(4535)	(4855)	(4509)
						(79%)	(25%)
single males	54164	5763	13800	26205	40365	48402	12405
	(2421)	(4787)	(982)	(2281)	(2613)	(5435)	(2154)
						(120%)	(31%)
single females	59268	11119	12693	28260	46575	48149	15567
	(2048)	(3896)	(816)	(4411)	(2204)	(4447)	(4163)
						(103%)	(33%)
B. Wealth measure: Ratio of wealth to permanent income							
couples	4.18	2.78	1.74	2.03	2.44	1.40	0.29
	(0.08)	(0.13)	(0.10)	(0.13)	(0.13)	(0.12)	(0.10)
						(57%)	(12%)
single males	1.18	0.34	0.47	0.67	0.70	0.83	0.19
	(0.06)	(0.11)	(0.04)	(0.06)	(0.07)	(0.13)	(0.05)
						(119%)	(27%)
single females	1.73	0.78	0.51	1.06	1.21	0.94	0.54
	(0.06)	(0.14)	(0.03)	(0.19)	(0.07)	(0.14)	(0.18)
						(78%)	(45%)
C. Wealth measure: Log of wealth							
couples	10.99	9.82	9.48	10.56	1.51	1.17	1.09
	(0.02)	(0.06)	(0.06)	(0.10)	(0.06)	(0.05)	(0.08)
						(77%)	(72%)
single males	8.96	7.25	6.96	8.49	2.00	1.71	1.53
	(0.07)	(0.13)	(0.08)	(0.15)	(0.10)	(0.10)	(0.12)
						(85%)	(76%)
single females	9.21	7.53	6.64	8.31	2.57	1.68	1.67
	(0.05)	(0.12)	(0.06)	(0.14)	(0.08)	(0.10)	(0.09)
						(65%)	(65%)

Notes: Computed from the trimmed pooled samples using weights (see text for details on the trimming). The regression coefficient estimates are estimated from the trimmed pooled samples without sample weights (see Tables A2-A4 for mean regression results). Columns (1) and (2) are based on coefficient estimates from the white sample, columns (3) and (4) on coefficient estimates from the black sample. Column (1) predicts wealth holdings for whites, column (3) for blacks. Column (2) uses the white coefficient estimates with the black sample to calculate counter factual wealth holdings for blacks, column (4) the black coefficient estimates with the white sample to calculate counter factual wealth holdings for whites. Column (5) is the difference between columns (1) and (3). Column (6) is the difference between columns (1) and (2), column (7) the difference between columns (4) and (3). The percentage gap explained is in parentheses in column (6) and in column (7). It is 100 times column (6) (column (7)) divided by column (5). Standard errors account for arbitrary forms of heteroscedascity and correlation across time and persons from the same 1968 household.

Table 4: Median regression decompositions of the race gap in wealth

Demographic group	White coefficients: White characteristics	White coefficients: Black characteristics	Black coefficients: Black characteristics	Black coefficients: White characteristics	Total gap	Explained gap using white coefficients (standard error, percent)	Explained gap using black coefficients (standard error, percent)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
A. Wealth measure: Level of wealth							
couples	118326	60301	33532	52378	84794	58057	18846
	(2578)	(2219)	(1153)	(6024)	(2824)	(1414)	(5175)
						(68%)	(22%)
single males	33374	12418	8600	18756	24774	20996	10156
	(2757)	(2505)	(1339)	(3464)	(3065)	(2335)	(2544)
						(85%)	(41%)
single females	35704	11837	3612	17090	32092	23867	13479
	(2485)	(1728)	(488)	(4662)	(2533)	(4170)	(3463)
						(74%)	(42%)
B. Wealth measure: Ratio of wealth to permanent income							
couples	2.97	2.02	1.16	1.44	1.81	0.96	0.28
	(0.05)	(0.05)	(0.05)	(0.12)	(0.07)	(0.04)	(0.11)
						(53%)	(15%)
single males	0.66	0.32	0.25	0.44	0.41	0.34	0.19
	(0.04)	(0.05)	(0.03)	(0.06)	(0.05)	(0.05)	(0.04)
						(83%)	(46%)
single females	1.03	0.50	0.13	0.51	0.90	0.53	0.38
	(0.12)	(0.04)	(0.02)	(0.11)	(0.12)	(0.16)	(0.10)
						(59%)	(42%)
C. Wealth measure: Log of wealth							
couples	11.23	10.30	9.87	10.75	1.36	0.93	0.88
	(0.02)	(0.04)	(0.05)	(0.10)	(0.05)	(0.03)	(0.08)
						(68%)	(65%)
single males	9.32	7.49	7.03	8.95	2.28	1.82	1.92
	(0.07)	(0.15)	(0.09)	(0.20)	(0.12)	(0.09)	(0.14)
						(80%)	(84%)
single females	9.66	7.84	6.55	8.69	3.11	1.82	2.13
	(0.05)	(0.16)	(0.10)	(0.16)	(0.11)	(0.11)	(0.12)
						(58%)	(69%)

Notes: Computed from the trimmed pooled samples using weights (see text for details on the trimming). The regression coefficient estimates are estimated from the trimmed pooled samples without sample weights. See Table 3 for the definition of columns (1) through (7). Standard errors are obtained via bootstrapping and account for arbitrary forms of heteroscedascity and correlation across time and persons from the same 1968

Table 5: Mean regression decompositions of the race gap in wealth components (couples sample)

	White coefficients		Black coefficients				
Wealth component	**White characteristics (standard error)**	**Black characteristics (standard error)**	**Black characteristics (standard error)**	**White characteristics (standard error)**	**Total gap (standard error)**	**Explained gap using white coefficients (standard error, percent)**	**Explained gap using black coefficients (standard error, percent)**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**
A. Wealth measure: Level of wealth component							
home equity	56859	28320	24550	34201	32309	28539	9651
	(657)	(1278)	(724)	(1513)	(978)	(1135)	(1237)
						(88%)	(30%)
farm/business	24060	7957	2120	6095	21940	16103	3975
	(1099)	(2138)	(353)	(737)	(1154)	(1899)	(603)
						(73%)	(18%)
stocks/mutual	23290	5077	2670	6724	20620	18213	4054
funds/IRAs	(915)	(1780)	(314)	(656)	(968)	(1581)	(537)
						(88%)	(20%)
B. Wealth measure: Ratio of wealth component to permanent income							
home equity	1.48	1.13	0.95	1.02	0.53	0.35	0.07
	(0.02)	(0.03)	(0.03)	(0.06)	(0.03)	(0.03)	(0.05)
						(66%)	(13%)
farm/business	0.58	0.28	0.07	0.14	0.51	0.30	0.07
	(0.02)	(0.05)	(0.01)	(0.03)	(0.03)	(0.04)	(0.02)
						(58%)	(14%)
stocks/mutual	0.52	0.29	0.07	0.15	0.45	0.23	0.09
funds/IRAs	(0.02)	(0.04)	(0.01)	(0.02)	(0.02)	(0.03)	(0.02)
						(51%)	(19%)

Notes: Computed from the trimmed pooled samples using weights (see text for details on the trimming). The regression coefficient estimates are estimated from the trimmed pooled samples without sample weights. The dependent variable is the indicated component of wealth. See Table 3 for the definition of columns (1) through (7). Standard errors are based on OLS formula.

Table 6: Mean regression decompositions of the race gap in wealth (siblings sample)

	White coefficients		Black coefficients				
Estimator	White characteristics (standard error)	Black characteristics (standard error)	Black characteristics (standard error)	White characteristics (standard error)	Total gap (standard error)	Explained gap using white coefficients (standard error, percent)	Explained gap using black coefficients (standard error, percent)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
A. Wealth measure: Level of wealth							
FE	64321	15119	17081	40258	47240	49202	23176
	(1160)	(4697)	(603)	(2686)	(1308)	(5611)	(5639)
						(104%)	(49%)
FE on means	64281	18591	16963	27858	47317	45689	10895
	(1446)	(7299)	(677)	(3546)	(1596)	(8806)	(4671)
						(97%)	(23%)
OLS	64321	11666	17081	42766	47240	52655	25685
	(1789)	(3733)	(794)	(3774)	(1957)	(4031)	(3455)
						(111%)	(54%)
OLS on means	64463	13350	16898	34052	47564	51112	17154
	(1865)	(4874)	(781)	(3435)	(2022)	(5041)	(3251)
						(107%)	(36%)
B. Wealth measure: Ratio of wealth to permanent income							
FE	1.30	0.55	0.49	0.73	0.82	0.75	0.25
	(0.02)	(0.09)	(0.02)	(0.07)	(0.03)	(0.11)	(0.11)
						(92%)	(31%)
FE on means	1.30	0.58	0.48	0.56	0.82	0.72	0.08
	(0.03)	(0.15)	(0.02)	(0.10)	(0.03)	(0.19)	(0.12)
						(88%)	(10%)
OLS	1.30	0.46	0.49	0.86	0.82	0.85	0.37
	(0.04)	(0.08)	(0.02)	(0.07)	(0.04)	(0.08)	(0.07)
						(104%)	(45%)
OLS on means	1.30	0.47	0.48	0.72	0.82	0.82	0.24
	(0.04)	(0.10)	(0.02)	(0.07)	(0.04)	(0.10)	(0.07)
						(101%)	(30%)
C. Wealth measure: Log of wealth							
FE	9.49	7.60	7.13	8.86	2.37	1.90	1.73
	(0.03)	(0.10)	(0.03)	(0.12)	(0.04)	(0.13)	(0.16)
						(80%)	(73%)
FE on means	9.45	7.70	7.12	8.88	2.33	1.75	1.76
	(0.03)	(0.17)	(0.04)	(0.15)	(0.05)	(0.24)	(0.21)
						(75%)	(75%)
OLS	9.49	7.45	7.13	9.07	2.37	2.04	1.95
	(0.04)	(0.10)	(0.05)	(0.09)	(0.06)	(0.08)	(0.08)
						(86%)	(82%)
OLS on means	9.46	7.42	7.11	9.07	2.34	2.03	1.95
	(0.04)	(0.10)	(0.05)	(0.10)	(0.06)	(0.09)	(0.09)
						(87%)	(83%)

Notes: Computed from the trimmed pooled siblings samples without sample weights (see text for details on the trimming). The regression coefficient estimates are estimated from the trimmed pooled siblings samples without sample weights. "OLS" denotes an OLS estimate, "FE" an OLS-fixed effects estimate, and "FE on means" a OLS-fixed effects estimate based on the mean of all observations for a given individual. The regression decompositions use all observations for a given individual regardless of the estimation method. See Table 3 for the definition of columns (1) through (7). Standard errors account for arbitrary forms of heteroscedasticity and family-specific serial correlation across siblings and time.

Table 7: Descriptive statistics for growth in wealth variables (5 year changes, couples sample)

	Full Sample		Trimmed Sample	
	White Couples (std. dev.)	**Black Couples (std. dev.)**	**White Couples (std. dev.)**	**Black Couples (std. dev.)**
ΔLog of wealth including main home equity (ln)	0.34	0.30	0.39	0.15
	(1.72)	(2.25)	(1.62)	(2.05)
ΔWealth including main home equity	33560	255	36160	8237
	(530443)	(316361)	(178330)	(60593)
ΔRatio of wealth including main home equity to permanent income (rt)	1.24	0.18	1.28	0.45
	(10.61)	(10.87)	(3.71)	(2.11)
ΔValue home (incl. 0)	8577	3676	8953	3723
	(59644)	(30790)	(57784)	(30785)
ΔValue farm/business (incl. 0)	6722	211	3645	281
	(282714)	(17480)	(115905)	(17359)
ΔValue stock/mf/ira (incl. 0)	15909	1077	12048	1079
	(130397)	(16398)	(74094)	(16412)
ΔRatio of value home (incl. 0) to permanent income (rt)	0.38	0.25	0.39	0.25
	(1.39)	(1.21)	(1.33)	(1.21)
ΔRatio of value farm/business (incl. 0) to permanent income (rt)	0.19	0.01	0.10	0.02
	(5.14)	(0.65)	(2.18)	(0.65)
ΔRatio of value stock/mf/ira (incl. 0) to permanent income (rt)	0.35	0.03	0.32	0.03
	(1.88)	(0.41)	(1.64)	(0.41)
Number of observations	4227	1216	4174	1214
Wealth growth from 1984 to 1989	2099	644	2073	643
Wealth growth from 1989 to 1994	2128	572	2101	571
Number of couples/singles	2594	789	2574	788

Notes: Computed without sample weights. The right two columns refer to the full sample, the left two columns to the trimmed sample (see text for details on the trimming). "Value of stock/mf/ira" refers to the value of shares of stock in publicly held corporations, mutual funds or investment funds, including stocks in IRAs. (ln) indicates that the corresponding descriptive statistics are computed from the log-trimmed sample and (rt) refers to the ratio-trimmed sample. The remaining descriptive statistics are computed from the level-trimmed sample.

Table 8: Mean regression decompositions of the race gap in growth of wealth (5 year changes, couples sample)

White coefficients		Black coefficients				
White characteristics (standard error)	Black characteristics (standard error)	Black characteristics (standard error)	White characteristics (standard error)	Total gap (standard error)	Explained gap using white coefficients (standard error, percent)	Explained gap using black coefficients (standard error, percent)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
A. Wealth measure: Level of wealth (first difference)						
36160	15366	8237	21967	27922	20794	13730
(2306)	(5511)	(1685)	(4668)	(2856)	(5006)	(4353)
					(74%)	(49%)
B. Wealth measure: Ratio of wealth to permanent income (first difference)						
1.28	0.58	0.45	0.70	0.83	0.70	0.25
(0.05)	(0.12)	(0.06)	(0.17)	(0.08)	(0.11)	(0.16)
					(84%)	(30%)
C. Wealth measure: Log of wealth (first difference)						
0.39	0.37	0.15	0.33	0.23	0.01	0.18
(0.02)	(0.06)	(0.06)	(0.14)	(0.06)	(0.05)	(0.13)
					(5%)	(77%)

Notes: Computed from the trimmed pooled samples without sample weights (see text for details on the trimming). The regression coefficient estimates are estimated from the trimmed pooled samples without sample weights. The dependent variable is the first difference of the indicated wealth measure between survey years. See Table 3 for the definition of columns (1) through (7). Standard errors are based on OLS formula.