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Racial differences in investor decision making

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Abstract

Racial differences in investment behavior are investigated using data from the 1995 Survey of Consumer Finances. Socioeconomic, financial, and attitudinal variables are incorporated in a life-cycle savings model. The impact of all variables is allowed to differ between Black households and White households to understand racial differences in risky asset ownership. We determine that observed racial differences in risky asset ownership are explained by racial differences in the individual determinants of risky asset ownership, not by race in and of itself. Specifically, these differences seem to center on the impact of children and household size.

JEL classification: D12; D91; G11; J70

Keywords: Individual investing; Life cycle models; Portfolio allocation; Racial differences; Risky assets

1. Introduction

Increasing volatility and record setting gains in the stock market have heightened media attention on investment planning and investment decision making. Recent articles in the Wall Street Journal (WSJ) suggest that affluent Blacks are less involved in the stock market than Whites (Boyce, 1998; Mabry, 1999), and may not be benefiting from market gains. The WSJ report is based on a study sponsored by Ariel Mutual Funds and Charles Schwab that does not attempt to explain the reasons for observed racial differences in investing. The fact that

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Blacks are less invested in stocks than Whites may indicate differences in risk tolerance and investment choice, or a cultural difference in investment behavior.

A better understanding of racial differences in investor behavior has several implications for individual investors, financial advisors, and retirement policy makers. First, individuals who participate in defined contribution retirement plans are increasingly choosing their own investment allocations. Racial differences in investment choices could lead to large differences between Blacks and Whites in wealth accumulation over the life cycle, possibly leaving Black families less prepared for retirement. Additionally, lower wealth accumulation reduces the household's ability to deal with financial shocks such as disability or death of a key income earner.

If there are racial differences in investment choices, then future financial education efforts may need to be tailored to the needs of specific racial groups. Financial consultants may also need to be aware of differences in risk tolerance that are race specific. If current risk tolerance measures are inaccurate for members of specific racial groups, this could lead to misunderstanding and poor implementation by planners. Lack of understanding between financial planners and Black clients may deter Blacks from ever seeking the advice of financial advisors. For financial advisors this is a significant target market to miss. Based on the 1995 Survey of Consumer Finance, the average Black household holds nearly $50, 000 in financial assets. A major concern for policy makers is the proposal for private control within Social Security Accounts. If this comes to pass, investment choice will directly impact the cornerstone of American retirement funds.

This study outlines the framework for, and empirically tests, a model of investor decision making for the purpose of explaining observed racial differences in risky asset ownership. Socieoeconomic, financial, and attitudinal variables are incorporated into the life-cycle model of saving to explain racial differences in the likelihood of ownership of stocks and/or small business.

2. Literature review and theory

Racial differences in economic decision making have been well studied (Jackson and Lindley, 1989; Myers and Chung, 1996), but racial differences in individual investment decisions has received less attention. Research on investment decisions consistently finds that risk tolerance is a key factor in investor decision making. Gender differences in investing have been analyzed (Bajtelsmit and Bernasek, 1996; Bajtelsmit, Bernasek, and Jiankoplos, 1999; Embrey and Fox, 1997) as well as relationships between risk tolerance, demographic characteristics, and investment portfolio allocation (Myers and Chung, 1996; Schooley and Worden, 1996; Zhong and Xiao, 1995). Much of this research uses ratios of risky assets to net financial assets, or ratios of risky retirement assets to total retirement assets as dependent variables (Yuh and Hanna, 1997).

In addition to racial differences, other factors affecting investment and economic decisions are critical to the present discussion. Myers and Chung (1996) examine racial differences in home ownership and equity levels, incorporating risk attitudes, investment horizon, and cognitive skills into models predicting expected home equity and home ownership. Myers

and Chung find that the factors affecting home ownership and home equity levels differ between Blacks and Whites. In particular, Black married females with higher incomes and higher cognitive skills show higher levels of home ownership; age, number of years married, and length of investment horizon positively influence home ownership for White married females.

Schooley and Worden (1996) use the 1989 Survey of Consumer Finances to examine factors associated with taking financial risks. Measures of individual risk tolerance are calculated from the actual household portfolio allocation. The level of individual risk tolerance is found to relate to socioeconomic factors, attitudes, and expectations of future income like Social Security or defined benefit pensions. Additionally, Schooley and Worden find that self-reported relative risk aversion accurately reflects the observed riskiness of the household portfolio allocation.

Embrey and Fox (1997) use the 1995 Survey of Consumer Finances to analyze gender differences in investment choice among single-person households. A Tobit model is used to analyze probabilities and levels of ownership of stocks versus CDs. They find that single women invest more conservatively than single men but that gender is not the significant determinant of investment choice. Instead, differences in investment choice between single men and single women are related to differences in financial and demographic characteristics including net worth, income, and age.

Yuh and Hanna (1997) examine the proportion of risky assets in retirement portfolios using data from the 1992 Survey of Consumer Finances. Yuh and Hanna find that education, age, and risk tolerance predict the proportion of risky assets in retirement portfolios. They discuss the need for educating workers, and make suggestions for benefits coordinators and financial planners. In a similar study, Yuh and DeVaney (1996) find that characteristics such as employer matching, longer employment, home ownership, and higher income are positively associated with amount invested in defined contribution plans.

Zhong and Xiao (1995) use the 1989 Survey of Consumer Finances to analyze factors associated with families holding stocks or bonds. They find that education, age, and race are significant factors in determining stock ownership. Households with White household heads are more likely to have stocks than are otherwise similar households with non-White household heads. They also find that households with more educated household heads are more likely to have stocks than otherwise similar households with less educated heads.

Investment in financial wealth and human wealth is analyzed by Shaw (1996) using the 1983 through 1986 Panel of the Survey of Consumer Finances. Shaw determines that increased risk aversion reduces investment in human wealth, and that risk tolerance and risky investments increase with education. Shaw concludes that this increased return on investments is part of the return to education.

Bajtelsmit, Bernasek, and Jiankoplos (1999) analyze gender differences in pension decisions. They include socioeconomic variables in an expected utility model of personal investment decisions. They then estimate an interaction model to better explain gender differences in pension decisions. The measure of relative risk aversion of households comes from the proportion of risky assets in the household portfolio. The authors conclude that observed gender differences in pension contributions are attributable to gender differences in

behavior; for example, the impact of age, education, and marital status on women's contributions to pensions differ from the impact of these same variables on men's contributions.

A common approach in the previous research is to include an indicator variable for race in the empirical model. This indicator variable allows the intercept to differ between Blacks and Whites. A statistically significant estimated coefficient on the indicator variable is interpreted as evidence of a racial difference. However, this specification may be too simplistic and restrictive. The individual determinants of the behavior may also differ by race, suggesting that separate equations should be estimated for each racial group. Bajtelsmit, Bernasek, and Jiankoplos (1999), Embrey and Fox (1997), and Jackson and Lindley (1989) take this more flexible approach, and we use similar methods in this study. The purpose of this study is to incorporate socioeconomic, financial, and attitudinal variables into the investment decision model. The model allows the impact of these variables to differ between Black households and White households to explain racial differences in the likelihood of ownership of stocks and/or small businesses.

Economic theory provides the framework for the investment decision model. The basic model builds on the notion of lifetime utility maximization from wealth accumulation through periods of borrowing and saving. The allocation of lifetime resources between current and future consumption was first formally introduced in Ando and Modigliani's (1963) life cycle hypothesis of savings. They state that the aggregate consumption/saving choice is a function of perception of permanent income, demographics, and interest rates on borrowing and savings. The basic model assumes no bequest motive. Expanding on this, Deaton (1992) outlines the following two period budget constraint for the representative consumer:

$$A_{t+1} = (1 + r_{t+1})\,(A_t + y_t\text{-}C_t) \tag{1}$$

where:

A_{t+1} = assets at time t + 1

r_{t+1} = the real rate of return

A_t = assets in period t

y_t = income in period t

C_t = consumption in period t.

This function incorporates both current income and factors that may affect the perception of future income flows. Deaton describes current utility as the present and future discounted values of the felicity or happiness associated with consumption. The value function equation is given by:

$$V_t(A_t) = \max n[\upsilon_t(y_t + A_t - \Sigma N_i) + E_t V_{t+1}(1 + r_{it+1}(\Sigma N_i))] \tag{2}$$

where:

$V_t(A_t)$ = the value function for current assets in period t

n = the number of assets

v_t = the marginal rate of felicity in period t

y_t = income in period t

A_t = assets in period t

N_i = real expenditures on assets

$E_t V_{t+1}(1+r_{it+1}(\Sigma N_i))$ = the expected future value of assets.

Maximizing Equation 2 subject to Equation 1 yields Equation 3

$$v_t(C_t)=E_t[(1+r_{it+1})V_{t+1}(A_{t+1})] \quad (3)$$

According to Eq. (3), the marginal felicity of consumption today is a function of the expected value of money at some nonzero interest rate. In other words, the marginal felicity or utility of consumption will be affected by the rate of return on savings. Thus, a higher return on savings yields higher possible consumption and hence higher possible utility.

The underlying economic theory relates investment choice to various characteristics. In a world of real nonzero interest rates, there is an opportunity cost of not saving. The opportunity cost is the rate of return that could be earned on savings. The higher the rate of return, the more overall consumption can be increased through saving and investing that also increases total lifetime utility. Because stocks have the highest real rate of return in the long run (Siegel, 1994), it is rational for investors to hold stocks to maximize lifetime returns. In addition, ownership of a business has a high potential return if successful.

3. Methodology

This study uses data from the 1995 Survey of Consumer Finances. The survey, sponsored by the Federal Reserve Board with cooperation from the Department of the Treasury, provides detailed information about household asset holdings and debt. The sample for this study is 3,939 households, consisting of households with a Black or White household head and where the gender of the household head is reported.

The Survey of Consumer Finances consists of five data sets due to multiple imputation of missing responses (Kennickell, 1997). Montalto and Sung (1996) describe the repeated imputation inference technique for analyzing multiply imputed data. Repeated Imputation Inference (RII) procedures use data from all five implicates and incorporate estimates of error due to missing data. RII techniques are used for estimation of the descriptive statistics and the logistic regressions in this study (Montalto and Yuh, 1998). The SCF data set contains a weight variable that can be used to generate estimates representative of the US population (Kennickell, McManus, and Woodburn, 1996). The descriptive statistics reported in this analysis are weighted. The logistic regressions are not weighted. Kennickell and McManus (1993) and Montalto (1998) discuss the drawbacks of using the weight variable in a

Table 1
Description of explanatory variables

Variables	Description
Socioeconomic variables	
Age	age of reference person
Age-squared	squared value of age of reference person
Household type (reference category: married couple)	
Single male	=1 if householder is unmarried male, 0 otherwise
Single female	=1 if householder is unmarried female, 0 otherwise
Children present	=1 if children are present in the household, 0 otherwise
Household size	number of persons in the household
Education (reference category: college graduate)	
Less than high school	=1 if years of education $<$ 12, 0 otherwise
High school	=1 if years of education = 12, 0 otherwise
Some college	=1 if years of education $>$ 12 and $<$ 16, 0 otherwise
Financial variables	
Net worth ($1000)	value of total assets minus total liabilities, measured in thousands
Annual household income (reference category: middle two quartiles)	
Lowest quartile	=1 if income $\leq$ $20,280, 0 otherwise
Highest quartile	=1 if income $>$ $113,000, 0 otherwise
Received inheritance	=1 if household has received an inheritance, 0 otherwise
Expects future inheritance	=1 if household expects future inheritance, 0 otherwise
Attitudinal variables	
Willingness to take risk (reference category: willing to take average risk)	
Not willing	=1 if not willing to take any risk, 0 otherwise
Above average risk	=1 if willing to take above average risk, 0 otherwise
Substantial risk	=1 if willing to take substantial risk, 0 otherwise
Positive economic outlook	=1 if household expects economy to improve over next 5 years, 0 otherwise
Negative economic outlook	=1 if household expects economy to do worse over next 5 years, 0 otherwise
Felt discouraged with credit	=1 if household reported previously feeling discouraged when applying for credit, 0 otherwise
Investment horizon	=1 if investment horizon of less than a year =2 if investment horizon of 1–2 years =3 if investment horizon of 2–5 years =4 if investment horizon of 5–10 years =5 if investment horizon of more than 10 years

multivariate analysis, as the weights are constructed from variables such as income that are commonly used by researchers in multivariate analyses.

A logistic regression is used to determine log likelihood estimates of the probability that a household holds stocks and/or business assets in their portfolio. If we assume that they hold risky assets by choice, then this indicator variable is the likelihood that they choose to hold these assets. The dependent variable in the logistic regression is an indicator variable equal to one if the household owns any stocks or business assets, and zero otherwise. This dependent variable is appropriate for our needs since we are interested in the choice to be invested in risky assets, not the amount invested in risky assets. The explanatory variables used in the model are based on socioeconomic, financial, and attitudinal characteristics (Table 1) that are highlighted in the literature as being relevant to risk aversion and risky asset ownership. In addition, indicator variables for receiving or expecting to receive an inheritance in the future are included to control for windfalls. Although we do not control for

gifts from living family members, the inheritance variables are included to determine whether or not assets are held more by choice than circumstance.

We are interested in analyzing racial differences in the likelihood of owning risky assets. Jackson and Lindley (1989) outline a procedure for testing for statistical differences between two groups by estimating a full interaction model, and decomposing any statistical difference to more accurately understand the nature of the between-group differences. To estimate the interaction model, data from the two groups are pooled. The dependent variable is regressed on an intercept term, the set of independent variables, an indicator variable for race, and a set of interaction variables created by multiplying each independent variable by the race variable. To carry out the decomposition two additional models are estimated—a reduced model that omits the indicator variable and the set of interaction variables, and an intermediate model that includes the indicator variable but omits the interaction variables.

The interaction model and the reduced model are compared to determine the joint significance of the indicator variable for race and the set of interaction variables. (In ordinary least squares regression the statistical test is an F-test; a comparable test for maximum likelihood estimation is the likelihood ratio test.) If this joint test is significant, then Jackson and Lindley (1989) outline a procedure for decomposing the total between-group difference into three components: the constant effect, the endowment effect, and the coefficient or response effect. The endowment effect is the portion of the total difference accounted for by differences between the two groups in the level of the explanatory variables. The coefficient or response effect is a measure of the difference between the two groups in the response of the dependent variable to changes in the independent variables. The interaction model and the intermediate model are compared to determine if there is a significant coefficient effect. The constant effect is the portion of the total difference that cannot be accounted for by differential endowments or differential responses. The estimated parameters on the race indicator variable in the interaction model are used to determine if there is a significant constant effect.

In our application, a significant coefficient effect provides evidence of racial differences in the impact of the explanatory variables on risky asset ownership. A significant constant effect provides evidence of racial differences in risky asset ownership beyond those factors controlled for in the model.

Two hypotheses are tested. The first hypothesis is that the effects of socioeconomic, financial, and attitudinal variables on risky asset ownership differ between Black households and White households. A likelihood ratio test is used to test the joint statistical significance of the race indicator variable and the set of interaction variables (comparison of the interaction model and the reduced model). Additionally, the significance of χ^2 statistics on individual interaction variables is used to identify the specific coefficients that differ between Black households and White households. The second hypothesis is that differences in risky asset ownership between Black households and White households are due to racial differences in the individual determinants of risky asset ownership (coefficient effect), not to race in and of itself (constant effect). A likelihood ratio test is used to test for the statistical significance of the set of interaction terms (comparison of the interaction model and the

intermediate model). The χ^2 statistic is used to test the statistical significance of the race indicator variable in the interaction model.

4. Results

Descriptive statistics for Black households and White households are provided in Table 2, along with the results of tests for statistical differences between the two groups. The majority of Black households are headed by a single female (51%) whereas the majority of White households are headed by a married couple (55%). However, 53% of Black households contain children compared to 42% of White households, and 10% of Black households contain other adult relatives compared to less than 4% of White households. On average, Black households are larger than White households (2.64 and 2.49, respectively).

The distribution of asset ownership differs between Black households and White households. Only 23% of Black households hold risky assets compared to 46% of White households. There are also significant differences between Black households and White households in the mean value of these assets. Black households hold significantly less of each asset type on average. The net worth measure also shows a significant difference between the two racial groups with White households having an average net worth of $246, 287, compared to only $45, 854 for Black households.

Black households report a lower willingness to take financial risks and have a shorter investment horizon compared to White households. A significantly higher proportion of Black households (60%) than White households (42%) report they are not willing to take any risk. Similar proportions of Black and White households are willing to take substantial financial risk. The average investment horizon is approximately three and a half years for Black households, compared to over five years for White households.

We examine whether the risk tolerance question posed in the SCF is perceived similarly by Black and White households. To do this, responses to the risk tolerance question are collapsed into an indicator for whether or not the household reports a willingness to take investment risks in expectation of higher returns. This indicator of willingness to take risk is then compared to an objective measure of risk tolerance—whether or not the household owns risky assets. The χ^2 test for independence reveals that households who report a willingness to take risks are more likely to own risky assets (Table 3, Panel A). Of households reporting that they are willing to take risk, 58% own risky assets, compared to only 24% of households not willing to take risk.

We also create an indicator variable for whether households exhibit consistent behavior—indicating they are willing to take risk and actually owning risky assets, or indicating they are not willing to take risk and actually not owning risky assets. This consistency variable is compared with the race variable. The results of the χ^2 test for independence indicate that White households are more likely than Black households to exhibit consistent behavior—being willing (unwilling) to take risk and actually owning (not owning) risky assets (Table 3, Panel B). These results may suggest that Black households differ from White households in the ability to own risky assets given the willingness to take risk. However, this conclusion should be interpreted cautiously since other factors are not controlled.

Table 2
Characteristics of Black households and White households[a]

Variable	Black households	White households	Test for difference between samples
Socioeconomic variables			
Age	46.2	49.5	$t = 14.152$*
Household type			
Single male	19.00%	18.88%	$\chi^2 = 8.077$*
Single female	51.16%	25.80%	$\chi^2 = 968.277$*
Married	29.90%	55.19%	$\chi^2 = 805.659$*
Household size	2.64	2.49	$t = 77.835$*
Others living with respondent			
Spouse/partner	36.69%	60.93%	$\chi^2 = 778.619$*
Children	53.23%	42.00%	$\chi^2 = 175.724$*
Adult relatives	9.95%	3.70%	$\chi^2 = 222.252$*
Other adults	2.01%	4.00%	$\chi^2 = 6.045$*
Education			
Less than high school	28.60%	17.57%	$\chi^2 = 309.573$*
High school	35.35%	29.94%	$\chi^2 = 90.347$*
Some college	23.10%	23.38%	$\chi^2 = 8.311$*
College degree	12.98%	29.11%	$\chi^2 = 532.301$*
Financial variables			
Net worth	$45,854	$246,287	$t = 8.37$*
Annual household income	$23,826	$52,231	$t = 7.173$*
Own risky assets	22.80%	46.14%	$\chi^2 = 940.50$*
Net financial assets	$49,511	$185,643	$t = 7.809$*
Stocks	$377	$17,639	$t = 2.686$*
Proportion of stocks in pensions	12.34%	16.93%	$\chi^2 = 23.245$*
Business assets	$3,355	$53,378	$t = 3.65$*
Stock funds	$153	$7,443	$t = 4.452$*
Received inheritance	10.98%	24.05%	$\chi^2 = 321.16$*
Expects future inheritance	4.34%	15.41%	$\chi^2 = 191.169$*
Attitudinal variables			
Willingness to take risk			
Not willing	59.72%	42.19%	$\chi^2 = 511.132$*
Average risk	29.59%	39.72%	$\chi^2 = 118.695$*
Above average risk	7.03%	14.73%	$\chi^2 = 156.905$*
Substantial risk	3.65%	3.36%	$\chi^2 = 2.729$
Expect United States economy to			
Improve	28.99%	25.22%	$\chi^2 = 9.180$*
Stay the same	38.54%	51.67%	$\chi^2 = 136.30$*
Worsen	33.47%	23.11%	$\chi^2 = 118.714$*
Discouraged when applying for credit	36.10%	12.90%	$\chi^2 = 1145.795$*
Investment horizon	3.45	5.17	$t = 118.93$*
Reasons for saving			
Financial goals	9.06%	9.07%	$\chi^2 = 3.023$
Emergency fund	40.41%	33.51%	$\chi^2 = 62.252$*
Charity	0.00%	0.10%	$\chi^2 = 4.274$*
Child's education	9.28%	8.49%	$\chi^2 = 4.991$
Luxuries	1.84%	3.13%	$\chi^2 = 2.241$
Durable goods	11.72%	9.31%	$\chi^2 = 48.399$*
Own education	5.24%	4.67%	$\chi^2 = 3.011$

[a] *Source:* 1995 Survey of Consumer Finances; data from all five implicates; estimates derived using repeated-imputation inference techniques.

*$p \leq 0.05$.

Table 3
Chi-square tests for independence (column percents reported)

Panel A: objective and self-reported risk tolerance					
	Willing to take risk	Not willing to take risk	Total sample		Test statistic
Own risky assets	58.0%	23.8%	42.7%		2319.84
Do not own risky assets	42.0%	76.2%	57.3%		($p = 0.000$)
Panel B: consistency of risk measures and race					
	Black	White	Total sample		Test statistic
Consistent	64.3%	66.5%	66.2%		4.84
Inconsistent	35.7%	33.5%	33.8%		($p = 0.028$)
Panel C: income distribution and race					
	Black	White	Mean income Black	White	Test statistic
Lowest 25%	57.1%	32.3%	$8,630	$10,808	988.36 ($p = 0.000$)
Middle 50%	41.9%	61.3%	$41,238	$48,262	43.75 ($p = 0.000$)
Highest 25%	1.1%	6.4%	$154,998	$293,668	567.56 ($p = 0.000$)

For the regression analysis, household income is categorized into three groups defined by the lowest quartile, middle two quartiles, and upper quartile of the sample income distribution. The majority of Black households are in the lowest income quartile (57%) compared to less than one third of White households (32%). Within each income category, mean income is lower for Black households compared to White households (Table 3, Panel C).

The logistic regression results for the interaction model (Table 4) indicate that there are racial differences in the determinants of stock and small business ownership. This supports our first hypothesis that the effects of socioeconomic, financial, and attitudinal variables on risky asset ownership differ between Black households and White households. The joint test of the race indicator variable and the set of interaction terms is statistically significant ($p < 0.001$).

The decomposition of the between-group difference indicates an insignificant constant effect ($p = 0.956$), and a statistically significant coefficient effect ($p < 0.001$). This supports our second hypothesis that differences in risky asset ownership between Black households and White households are due to racial differences in the individual determinants of risky asset ownership, not to race in and of itself. In the intermediate model, the race indicator variable is significant and negative, indicating that Black households are less likely than White households to hold stocks and small business investments. However, in the interaction model, race is no longer statistically significant.

Racial differences in the determinants of stock or small business ownership are due to differences between Black households and White households in the impact of explanatory variables on risky asset ownership. Specifically, the χ^2 statistics on the interaction variables for presence of children and household size are statistically significant, indicating that

Table 4
Logistic analysis of likelihood of investing in risky assets[a]

Variable	Reduced model	Intermediate model	Interaction model
Intercept	−0.0539	−0.0842	−0.2174
Socioeconomic variables			
Age	0.0489**	0.0513***	0.0506**
Age-squared	−0.0005***	−0.0005***	−0.0005***
Household type (reference category: married couple)			
Single male	−0.4152***	−0.4028**	−0.3611**
Single female	−0.4934***	−0.4442***	−0.4333**
Children present	0.0633	0.0684	−0.0423
Household size	−0.0516	−0.0481	0.0036
Education (reference category: college graduate)			
Less than high school	−1.1675***	−1.1515***	−1.0561***
High school	−0.5532***	−0.5434***	−0.4947***
Some college	−0.4690***	−0.4616***	−0.4145***
Financial variables			
Net worth ($1000)	0.0024***	0.0024***	0.0024***
Income (reference category: middle two quartiles)			
Lowest quartile	−0.9783***	−0.9643***	−0.9282***
Highest quartile	0.9673***	0.9635***	0.9781***
Received inheritance	0.4061***	0.3900***	0.4031***
Expect to receive inheritance	0.1476	0.1164	0.1310
Attitudinal variables			
Willingness to take risk (reference category: willing to take average risk)			
Not willing	−0.8074***	−0.7982***	−0.8275***
Above average risk	0.3371**	0.3242**	0.3761**
Substantial risk	0.4046	0.4058	0.4698
Positive economic outlook	−0.0912	−0.0726	−0.1350
Negative economic outlook	−0.1900	−0.1775	−0.1856
Felt discouraged with credit	−0.2974*	−0.2376	−0.2842
Investment horizon	0.0217*	0.0201*	0.0209*
Indicator for Black Household	—	−0.4723**	−0.0973
Interaction variables			
Age	—	—	−0.0471
Age-squared	—	—	−0.0006
Household type (reference category: married couple)			
Single male	—	—	−0.2438
Single female	—	—	−0.2477
Children present	—	—	1.0827*
Household size	—	—	−0.4227*
Education (reference category: college graduate)			
Less than high school	—	—	−1.0574
High school	—	—	−0.5167
Some college	—	—	−0.5850
Financial Variables			
Net worth ($1000)	—	—	−0.0003
Income (reference category: middle two quartiles)			
Lowest quartile	—	—	−0.2863
Highest quartile	—	—	−0.7225
Received inheritance	—	—	−0.2140
Expect to receive inheritance	—	—	−0.3503

Table 4 *(continued)*

Variable	Reduced model	Intermediate model	Interaction Model
Attitudinal Variables			
Willingness to take risk (reference category: willing to take average risk)			
Not willing	—	—	0.2520
Above average risk	—	—	−0.8099
Substantial risk	—	—	−0.3540
Positive economic outlook	—	—	0.5663
Negative economic outlook	—	—	0.0543
Felt discouraged with credit	—	—	0.0958
Investment horizon	—	—	−0.0033
−2 Log Likelihood[a]	3642.96***	3632.23**	3608.84***

[a] Source: 1995 Survey of Consumer Finances; data from all five implicates; estimates derived using repeated-imputation inference techniques

[b] Statistic reported is the average of the five −2 log likelihood statistics from analysis of the separate implicates.

* p-value ≤ 0.05; ** p-value ≤ .01; *** p-value ≤ 0.001

changes in presence of children in the household and in household size affect risky asset ownership of Black households differently than White households (Table 4). The presence of children in the household increases the likelihood of risky asset ownership by Black households, and increases in household size decrease the likelihood. These two variables do not have statistically significant effects on risky asset ownership of White households.

A few determinants of risky asset ownership are common between Black households and White households. Households with a householder who is a college graduate are more likely to own risky assets compared to otherwise similar households with a less educated householder. Households with income in the lowest income quartile are less likely than households with income in the middle two income quartiles to own risky assets. Ownership of risky assets is less likely among households indicating that they are not willing to take financial risk compared to households willing to take average financial risk.

Several other determinants of risky asset ownership are statistically significant for White households but not for Black households, although the tests for racial differences in the effects of these variables are not statistically significant. Age has a nonlinear effect on the likelihood of risky asset ownership for White households, even when income and net worth are controlled. The likelihood of risky asset ownership increases with age until a maximum, after which the likelihood decreases. White households headed by an unmarried householder are less likely to hold risky assets than otherwise similar households headed by a married couple. Net worth and income are positively associated with the likelihood of risky asset ownership for White households. White households with income in the highest income quartile are more likely to own risky assets than otherwise similar households with income in the middle two income quartiles. Having received an inheritance increases the likelihood of owning risky assets, controlling for income and net worth. An inheritance may include risky assets in the portfolio resulting in risky asset ownership "by chance" rather than by investment choice.

White households that are willing to take above average financial risk or substantial financial risk are more likely to own risky assets than otherwise similar households that are

willing to take only average risk. The investment horizon is positively associated with the likelihood of risky asset ownership for White households. White households that expect the economy to do worse over the next five years, and households that report previously feeling discouraged when applying for credit are less likely to own risky assets.

5. Conclusions

Racial differences in investment decisions related to ownership of risky assets seem to center on the impact of children and household size. The presence of children in the household increases the likelihood of stock or business holdings for Black households. Household size is negatively related to risky asset ownership for Black households. These two variables do not have statistically significant effects for White households. Although the household size variable may indicate presence of children, it is also attributable to the presence in Black households of other adult relatives who may not be able to contribute to household financial resources, thus reducing the likelihood of risky asset investment.

If Black households and White households perceive financial risks differently, then racial differences in investment decision making might be due to racial differences in the perception of financial risk. However, we do not find evidence of a racial difference in the impact of reported willingness to take risk through risky asset ownership; none of the interaction terms on the risk variables are significant. However, Hanna and Gutter (1998) caution that the SCF measure of risk tolerance does not strictly fit the economic concept of relative risk aversion. A more theoretically guided measure of risk tolerance may be needed to further explore racial differences in risk tolerance.

There are several limitations to this study that are inherent to the data set used. Several variables that we would like to include in the multivariate analysis are not available in the Survey of Consumer Finances public use data set. We would like to control for living in a metropolitan versus a non-metropolitan area, because living in a metropolitan area provides a greater pool of community resources and a greater prevalence of financial institutions. A metropolitan indicator variable could serve as a proxy for the amount, but not the actual use, of financial information. We also do not have information on whether investment advice was received from family, peers, or the media.

The findings of this study are generally consistent with previous studies that Blacks and Whites have different investment behaviors (Boyce, 1998; Mabry, 1999; Myers and Chung, 1996; Zhong and Xiao, 1995). Our empirical model allows the effect of socioeconomic, financial, and attitudinal variables on risky asset ownership to differ between Black households and White households. With this empirical specification we are able to conclude that racial differences in risky asset ownership are due to racial differences in the individual determinants of risky asset ownership, not to race in and of itself. This enhanced understanding of racial differences in investor decision making can help financial practitioners more accurately understand and better serve a racially diverse clientele. Improved service should lead to more use of financial advisors by clientele, resulting in improved portfolio allocation. In the long run, strategic portfolio allocation should yield higher net worth, higher lifetime consumption, and higher lifetime utility.

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