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Financial Capability, Cumulative Advantage and Racial Inequality in Wealth

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Abstract: This paper develops a model of financial success that draws on theories of financial capability, as well as those of cumulative advantage and the racial sedimentation of wealth. It uses data from the Survey of Consumer Finances accessed through the Luxembourg Wealth Study to estimate structural equation models that predict participation in a range of financial outcomes as well the value of the assets. It finds that those who have higher financial literacy, financial confidence, and consult with financial advisors are more likely to hold all types of assets, and have a greater dollar amount saved or invested. Net of these individual characteristics, people with fewer socioeconomic advantages have less financial capability, as well as lower financial success. In addition, there remain direct pathways between race/ethnicity and wealth.

Introduction

Scholars have long argued that wealth varies due to individual characteristics, according to a theory of financial capability. They have explored how economic assets are shaped by financial knowledge, attitudes, and behavior. More recently, they have assessed how such capability is related to confidence (Cupak et al. 2022). According to this view, people have better financial outcomes if they are more than if they are less financially literate (Chu et al. 2017, Von Gaudecker 2015). They also benefit from being more confident about their abilities (Cupak et al. 2022). In addition, they may gain advantage from seeking professional advice (Von Gaudecker 2015).

Other scholars have demonstrated that financial assets vary not just according to individual, but also due to ascriptive characteristics, particularly race and ethnicity. White people tend to have higher net worth than do non-white people (Conley 1999, Oliver and Shapiro 1997). In 2019, for example, white families held nearly eight times as much wealth at the median as did Black families and five times as much wealth as Hispanic families (Bhutta et al. 2020). In part, they have more resources because they are more likely to have received an inheritance and to own property (Avery and Rendall 2002, Bhutta et al. 2020).

This manuscript combines these two areas of research to explore the extent to which race and ethnic differences in wealth are associated with differences in financial capability, confidence, and advice. It tests predictions based on a model derived from financial capability theory combined with the theories of cumulative advantage and the sedimentation of racial inequality (DiPrete and Eirich 2006, Lusardi and Mitchell 2014, Merton 1968, Oliver and Shapiro 1997). It

proceeds in the following fashion. It first lays out the background drawing on the economic theory of financial capability. It then lays out the sociological theories of cumulative advantage and the sedimentation of racial inequality. It next discusses research regarding whether and how financial capability and literacy are associated with socioeconomic and demographic differences. It uses these theories and research to develop a conceptual model describing how social and demographic characteristics are related to wealth in ways that are at least partially mediated by knowledge, beliefs, and behavior.

Financial Capability Theory and Research

This section explores the range of predictions associated with financial capability theory. It begins by outlining the original financial capability theory, which focused on knowledge, primarily reflected in financial literacy. More recently scholars have begun to incorporate the idea of financial advice, as well as speculating about the relationship between knowledge and advice. In addition, they incorporate the idea of people's emotions as represented by financial confidence.

The foundation of the theory suggests that people have more success in investing and saving if they are more financially literate or have more financial knowledge. Researchers have tended to assess financial literacy as a skill or capacity that people have that is associated with an ability to apply mathematical and financial concepts, such as calculating interest rates, or with knowledge of financial matters, such as how money is created (Huang et al. 2015, Kraemer et al. 2020).

Scholars have demonstrated that people who are more financially literate behave differently than those who are less literate and have better economic outcomes. According to a meta-analysis, people who are more financially literate are more likely to save for emergencies and plan for retirement (Amari, Salhi and Jarboui 2020, Fernandes, Lynch and Netemeyer 2014). They are also more likely to invest in ways that minimize their "return loss," which refers to the gap between the actual and maximum theoretical return on a portfolio (Von Gaudecker 2015). In China, they are more likely to invest in the stock market, thus potentially increasing their assets (Chu et al. 2017, Pan, Wu and Zhang 2020, van Rooij, Lusardi and Alessie 2011). In addition, they make decisions about the relative riskiness of their investments in ways that are more in line with their preferences (Chung and Park 2019). They also receive higher rates of return (Chu et al. 2017).

According to the theory, people also have different levels of access to institutions, such as banks and brokerage firms, which also shape financial outcomes. This work suggests that people make choices that are shaped by resources to which they have access (Thaler and Sunstein 2008). In turn, they may benefit from an interaction between literacy and institutions, with more literate people benefiting more than those who are less literate from institutional access (Huang et al. 2015).

One form of institutional access could be access to professional financial advisors. Research has produced findings that are mixed regarding the impact of financial advice. Some research suggests that financial advice functions similar, or at least parallel, to financial literacy (Hung and Yoong 2010, Kramer 2012). People who have received advice behave in ways that are more

consistent with financial best practices than those who have not been advised. They are more likely to save and plan for the future (Fan 2021, Winchester and Huston 2015). They have lower return losses (Von Gaudecker 2015). They are less likely to invest in ways that are either too conservative or too aggressive. They are also more likely to hold portfolios that are more diversified (Hung and Yoong 2010). In addition, they are more likely to take steps that are consistent with their subjective tolerance for risk if they have consulted a financial planner than if they have not done so (Park and Yao 2016). In the Netherlands, they make less risky investments and have more diversified portfolios (Kramer 2012).

Other scholars have produced findings that suggest the reverse. According to some research, people with accounts that are advised have lower rates of return than those whose accounts are not advised (Hackethal, Haliassos and Jappelli 2012). Yet these associations may stem from reverse causality, with people being more likely to seek advice when they face financial difficulties (Hackethal, Haliassos and Jappelli 2012). People may be more likely to seek advice when their investments are performing poorly (Hung and Yoong 2010).

Research and theory indicate that literacy and advice may be related in ways that suggest they are inversely related. According to some work, more knowledgeable people are less likely than those with less knowledge to seek advice (Hung and Yoong 2010). They are also more likely to reject certain types of financial advice (Carmel et al. 2015). They are less likely to consult financial advisors if they "invest in financial literacy" by, for example, attending investment seminars (Barthel and Lei 2021). Yet other research finds that more financially literate people are no more or less likely to seek advice (Kramer 2016).

Scholars have recently extended this theory of financial capability to explore financial confidence. They have looked at how literacy, which may be seen as objective knowledge of facts, may overlap with confidence, which reflects one's subjective assessment of that knowledge. According to this research, people are more likely to invest in recommended ways if they are more confident of their financial abilities regardless of their knowledge (Cupak et al. 2022). Drawing on this previous research and theory, therefore, the manuscript tests the following prediction:

> *Financial capability hypothesis*: People are more likely to save, invest and have more assets if they have higher levels of literacy, confidence, and have received professional advice.

Cumulative Advantage and the Sedimentation of Racial Inequality

It could also be that wealth reflects not individual knowledge and behavior, but rather the benefits and disadvantages based on the social groups to which people belong. Wealth may operate in ways that are consistent with the theory of cumulative advantage, which suggests that people who begin with more benefits accumulate more resources as they age. The theory stems from the observation that Nobel laureates receive a disproportionate share of the credit for work on which they collaborate with others (Merton 1968). The theory has been expanded to encompass a more general observation that people who start from a privileged position are able to accrue more advantages over time (DiPrete and Eirich 2006).

The theory has been applied to a variety of life course outcomes. Previous work has focused, for example, on how socioeconomic outcomes vary by gender, race, and class origins. Men have socioeconomic opportunities that differ from those of women (Charles and Bradley 2009,

England 2010). Blacks and Latinos have consistently had less educational and economic success than whites (Fischer and Hout 2006). People also have access to different educational opportunities based on their family background (Blau and Duncan 1967, Bourdieu 1984). Due to variation in gender, race and class, people have access to different types of social networks, friends and acquaintances, or social capital (Mouw 2006). In turn, they may use their social capital to access different amounts and types of financial help (Chang 2005). The theory may be particularly appropriate to the study of wealth, defined as the stock of resources and debts that have collected over time. The manuscript therefore tests the following prediction:

> *Cumulative advantage hypothesis*: People are more likely to save, invest and have more assets if they have more social and demographic advantages.

In the case of wealth, the theory of cumulative advantage may overlap with the concept of the sedimentation of racial inequality. While cumulative advantage refers to benefits derived in one's life time, the process may extend across generations. Indeed, previous research has shown that wealth inequality surpasses income disparities by race and by education (Avery and Rendall 2002, Killewald, Pfeffer and Schachner 2017, Oliver and Shapiro 1997). According to this view, Black people are at a disadvantage relative to white people due to institutional racism and discrimination (Oliver and Shapiro 1997). They face the historical legacy of slavery and exclusion from real estate and other domains, which, in turn, translates into lower wealth (Oliver and Shapiro 1997). They are less likely to have inherited money from their relatives than whites, which leads them to have lower net worth (Avery and Rendall 2002). Historical work suggests that Blacks, along with other non-whites, have traditionally been excluded from the financial system in the United States. Whites continue to be more likely than Blacks to participate in that

system (Charron-Chenier and Seamster 2021). Drawing on this theory and research, the manuscript tests the following proposition:

> *Racial inequality hypothesis*: White people are more likely to save, invest and have more assets than non-white people.

Inequalities in Financial Knowledge and Behavior

Previous scholars have evaluated the pathways between the individual characteristics referred to in financial capability theory and the ascriptive characteristics encompassed by the theories of cumulative advantage and the sedimentation of racial inequality. They have explored, for example, how social and demographic characteristics relate to financial literacy. They have demonstrated that people may be more or less literate in ways that correspond with these characteristics. People tend to be more financially literate if they already have social and economic advantages. They have higher financial literacy if they have more education (Lusardi and Mitchell 2014, van Rooij, Lusardi and Alessie 2011). Men are more likely than women to know the correct answers to financial questions such as how interest is compounded (Chen and Garand 2018). Wealthier people are more financially literate than the less wealthy (Lusardi and Mitchell 2014, van Rooij, Lusardi and Alessie 2011).

Other researchers have evaluated the socioeconomic and demographic correlates of seeking professional financial advice. According to some work, people with more socioeconomic advantages are more likely to pay to get help from a professional. As with financial literacy, people are more likely to seek advice if they are wealthier (Hung and Yoong 2010, Kramer 2012). Among those who save or invest, people tend to ask their friends for advice about how to do so at all levels of the wealth distribution, but they are less anxious about and more likely to

consult financial professionals if they have higher net worth (Chang 2005, Gerrans and Hershey 2017). They are also more likely to hire an advisor if they have higher income (Fan 2021, Kramer 2016, Winchester and Huston 2015). In addition, they are more likely to do so if they are more educated and if they are white than if they are Black (Charron-Chenier and Seamster 2021, Fan 2021). Yet, women are more likely to seek such advice than men (Hung and Yoong 2010, Kramer 2012). We therefore test the following two predictions, which suggest that financial capability mediates the socioeconomic and racial inequalities in wealth.

> *Cumulative advantage mediation hypothesis*: People are more likely to save, invest and have more assets if they have more social and demographic advantages because they have higher levels of financial literacy, confidence, and are more likely to be advised.
>
> *Racial inequality mediation hypothesis*: Whites are more likely to save, invest and have more assets than are non-whites because they have higher levels of financial literacy, confidence, and are more likely to be advised.

The Conceptual Model

Figure 1 builds on this previous research and theory to describe a conceptual model of how social and demographic factors may shape knowledge, belief, and behavior, and ultimately wealth. According to the theory of cumulative advantage, people have financial outcomes that are shaped by their social origins and ascriptive characteristics. Blacks suffer the sedimentation of racial inequality, which leaves them with fewer opportunities to accumulate wealth. Drawing on financial capability theory, the model posits pathways from literacy, confidence and advice to financial investing and saving, and thereby to wealth. In addition, it suggests intermediate pathways from the social and demographic characteristics to literacy, confidence and advice. Table 1 summarizes the expected relationships.

[Figure 1 about here.]

[Table 1 about here.]

Data and Methods

Data

We utilize the Luxembourg Wealth Study (LWS) Database to analyze data from the Survey of Consumer Finances (SCF) collected in the United States in 2022 (Luxembourg Wealth Study (LWS) Database 2022). It is worth noting that SCF is a top-notch survey that brings researchers diverse opportunities in household finance research. For our analysis, we employ several LWS harmonized variables that come from the section of behavioral variable, balance sheet, income section as well as the socio-demographic characteristics of respondents.

We examine four financial outcomes as dependent variables. The four outcomes are the following: risk-free savings, such as bonds, savings accounts, and defined benefit retirement funds; risky investments, such as stocks, individual retirements accounts, and defined contribution retirement funds; financial assets, which is the sum of the risk-free and risky assets; and all assets, which includes financial assets along with business equity and the value of real estate other than the principal residence.

We test two versions of each of these variables. The first examines whether the respondents engaged in the four behaviors (risk-free savings, risky investments, financial assets, and all assets) with nominal outcome measures. The second examines the value in dollars, conditional on participation, held in each of the four categories using continuous variables.

The independent variables of focus are race and education. We also include measures of gender, age, and household disposable income transformed using the inverse hyperbolic sine

(IHS) function.[3] The IHS transformation is useful in cases where natural logarithm cannot be used due to zeros and negative values; it is formalized with respect to X as follows:

$$sin^{-2}X = \ln (X + \sqrt{1 + X^2})$$

The models assess the role of three mediators: Financial literacy represents the sum of the correct answers to three questions regarding how finances operate, we assign value 1 to a respondent who answered correctly all 3 questions correctly and 0 otherwise [see Appendix 1]. Financial confidence represents how respondents assess their own financial abilities on a scale of 0-10 [see Appendix 2]. Financial advice represents whether the respondent consulted a professional financial advisor. The descriptive statistics are presented in Table 2.

[Table 2 about here.]

Missing data and multiple imputations

The wealth data utilized in this paper has been imputed by the data provider (Board of Governors of the Federal Reserve System) due to the missing values encountered during the interviews. Specifically, the missing values (don't know and refusals) were imputed five times, creating a five times larger dataset in the number of observations. The analysis of imputed data requires specific procedures and the usage of replicate weights (if available) to obtain the correct standard errors and (by association) confidence intervals. Thus we employ the multiple imputations techniques provided by Stata software to calculate the accurate coefficients and the standard errors utilizing the bootstrap procedure with survey weight and the 999 replicate weights.

Models

[3] For interpretation of coefficients estimated from variables transformed with the inverse hyperbolic sine function, see Bellemare and Wichman, 2020.

We test the hypotheses using structural equation models based on our conceptual model. These models allow us to test for both direct and mediated pathways between the exogenous predictors and the measures of wealth (Duncan 1975). In addition, they allow us to specify the extent to which our predictors are associated with different levels of financial literacy, confidence, and advice. They also incorporate the possibility that these three measures of financial knowledge, attitudes, and behavior are correlated. They have been used in previous research on related topics (Fan and Henager 2022, Galster and Wessel 2019). In this manuscript, they are based on the following four simultaneous equations:

$$y_k = \alpha_k + \beta_k X + \gamma_k Z + e.y_k \quad (1)$$

$$z_1 = \alpha_1 + \beta_1 X + e.z_1 \quad (2)$$

$$z_2 = \alpha_2 + \beta_2 X + e.z_2 \quad (3)$$

$$z_3 = \alpha_3 + \beta_3 X + e.z_3 \quad (4)$$

Where y represents the k different outcome variables (e.g., investment in and dollar amount of risky assets); z_1 represents financial literacy; z_2 represents financial confidence; z_3 represents financial advice; β_k, β_1, β_2, and β_3 are vectors of coefficients for the predictor variables (e.g., race/ethnicity); γ_k, is a vector of coefficients for the mediating variables (e.g., financial literacy); $e.y_k$, $e.z_1$, $e.z_2$, and $e.z_3$ represent the error terms or variances; and $e.z_1$, $e.z_2$, and $e.z_3$ are freely correlated, producing covariances of the mediating variables.

Since a significant fraction of our dependent variables (financial outcomes) have a value of zero in addition to the positive values, we utilize in the structural equations models the functional form for corner solution response that implies a dependent variable that has the value of zero for some fraction of the population and is roughly continuously distributed over positive values (Wooldrige, 2002: 518). Specifically, we employ the Tobit for corner solution response for our γ_k as well as OLS estimator for our z_1, z_2 and Linear Probability Model (LPM) for z_3. The

Tobit estimation comprises OLS regression and binomial probit, formalized in the following equation:

$$\dot{y_k} = \alpha_k + \beta_k X + \gamma_k Z + e.y_k \qquad e.y_k : N(0, \sigma^2) \qquad \dot{y_k} : N(\beta_k X, \sigma^2) \qquad \dot{y_k} : N(\gamma_k Z, \sigma^2) \qquad (5)$$

$$y_k = \dot{y_k} \ if \ \dot{y_k} > 0 \qquad y_k = 0 \ if \ \dot{y_k} = 0$$

where $\dot{y_k}$ is a latent dependent variable, and y_k contains either zeros or positive values. The LPM is specified by the following equation:

$$\Pr(y_k = 1|X) = \alpha_k + \beta_k X + \gamma_k Z + e.y_k \qquad (6)$$

Findings

Table 3 presents results from models predicting the relationships between the respondents' background characteristics and indicators of financial literacy, confidence, and advice. The table suggests that cumulative advantage in wealth may be partially mediated by financial knowledge, attitudes, and behavior. People with more socioeconomic and demographic advantages have higher literacy, confidence, and are more likely to receive advice. They see further increases in those features if they attained a BA. White people are more likely than non-white people to have higher literacy and are more likely to have been advised. They are also more confident than are Hispanic people. The pattern is similar for non-Hispanic Blacks, though they are no less likely than non-Hispanic whites to be financially confident. These results suggest that racial inequalities are partially mediated by these characteristics.

[Table 3 about here.]

Tables 4 and 5 predict whether or not people engaged in the selected financial behaviors. It tests the extent of the associations of these activities with social and demographic characteristics as

well as with indicators of financial literacy, confidence, and advice. They show the full structural models for each of the four outcomes. They demonstrate direct associations between the social and demographic characteristics, as well as indirect associations that are mediated by literacy, advice, and confidence.

[Table 4 about here.]

[Table 5 about here.]

These tables present evidence consistent with the financial capability hypothesis. According to the tables, people are more likely to invest and save if they are more financially literate and confident, as well as if they have received advice. Financial literacy is most strongly related to the probability of holding risky assets. Increases in financial literacy lead to increases in the odds of holding all assets, but those increases with respect to holding risky assets are somewhat larger than increases in the odds of holding other asset categories.

These columns also present evidence that is consistent with both the cumulative advantage and racial inequality hypotheses. Net of the mediators, there are still direct pathways between the socioeconomic/demographic characteristics and the outcomes. The associations with educational attainment suggest that attending college increased the likelihood of engaging in any of these activities, but that attaining a BA doubled these odds. People are also less likely to save and invest, net of literacy, confidence, and advice, if they are Black. They are particularly less likely to have savings. They are also less likely to engage in the financial behaviors if they are Hispanic. Hispanics are particularly less likely to hold risky assets.

Table 6 presents a similar series of models, but in this case, they predict the dollar value of the specified type of assets and are conditional on holding the assets. These models present similar patterns with respect to financial capability. People have more money in all of the investment categories if they are more financially literate and confident, as well as if they received advice. They see increases based on advice and confidence in the values of these investments in similar fashion. Yet they benefit from the largest increase in risky assets if they are more financially literate. These results are consistent with the financial capability hypothesis.

[Table 6 about here.]

The results also suggest cumulative advantage, though with slightly different patterns across the types of resources. Net of the mediators, people have different values of the financial resources based on their social and demographic characteristics. People have higher values of all of the assets if they have higher income. Similar patterns are seen for education. As with the preceding models, there is still a direct association between being Black and the value of investments. Among those with risky assets, Black people had particularly low values compared to whites.

The coefficients from these models differ from those predicting the mediators in two important ways. First, the patterns differ across the particular types of assets among Black respondents. Blacks have lower values than non-Hispanic whites of all of the assets, but particularly low values in the relatively safe category of non-risky assets, such as bonds and savings. By contrast, Hispanics do not differ statistically in the value of risky assets. These results suggest a double

disadvantage for Blacks and Hispanics who are both less likely to invest in these assets and hold lower values of the investments when they do so.

Conclusion

Our results confirm previous findings regarding financial capability. People were more likely to engage in financially profitable activities ranging from saving to holding risky assets if they have greater financial literacy, more financial confidence, and had received advice. They also had higher values of these assets if they had these individual characteristics. The results also showed that the measures of financial capability co-varied, though the relationship was weakest for literacy and advice.

In addition, the results provided evidence of cumulative advantage. People with more socioeconomic and demographic advantages were more likely to hold the different types of assets and, when they did, had more money. They also had higher financial literacy, confidence, and were more likely to be advised.

Furthermore, the results provided evidence that was consistent with the sedimentation of racial inequality both in wealth and the factors associated with it. Whites were more likely than non-whites to hold all types of assets, and to hold more dollars in those assets categories. They were also more likely than non-whites to have higher financial literacy and to receive advice. They were also more financially confident than Hispanics. In addition, the results suggest that at least some of these relationships between the race/ethnic categories and the assets are mediated by the knowledge, attitudes and behaviors encompassed in financial capability theory.

The analyses are most limited by the fact that they rely on cross-sectional data. As a consequence, they can only suggest but cannot confirm causal relationships. In particular, it may be that people have more financial capability as a consequence of having and participating in financial markets. They may, for example, have greater access to professional advisors due to having more money, which could, in turn, increase their literacy and confidence.

Another limitation is that the analyses cannot look at the role of the intergenerational transmission of wealth. The 2022 CFS only includes measures of inheritance received over the last five years. This short time horizon limits the ability to directly test the sedimentation of racial inequality, or the extent to which racial differences in wealth stem from resources passed from one generation to the next.

In turn, these limitations suggest possible directions for future research. Future scholars could collect longitudinal data on wealth to get a better sense of how financial capability changes as people become more or less likely to participate in the financial market. They could also evaluate how these factors change as people gain or lose assets during their lifetimes. Similarly, research across multiple generations could help to identify the extent to which both wealth and financial capability are passed down from one generation to the next.

Researchers could also explore the extent to which the patterns observed in these data from the United States extend to other countries. Scholars have suggested that the United States is at the far end of the policy spectrum with respect to the country's welfare state due to neoliberal

policies (Garfinkel, Rainwater and Smeeding 2006), thus making the participation in financial markets more imperative. In addition, American employers have increasingly shifted the burden of risks onto individuals, in particular in the shift from defined benefit to defined contribution plans (Hacker 2019). It may therefore be that the patterns we observe in the American context are less pronounced in other countries with more generous social policies.

Despite these limitations and opportunities for future research, the current analyses suggest that efforts to increase financial literacy and confidence, as well as the availability of financial advice, may help people accumulate wealth, providing a pool of resources to be used in retirement and in case of emergency. Efforts to increase familiarity with finances, such as the ability to understand how interest rates function, may help those with fewer resources gain more, thereby reducing wealth inequality.

Nevertheless, the analyses show that inequalities remain that are associated with ascriptive characteristics. These inequalities persist over and above the differences in financial capability. Thus, just addressing financial literacy and the availability of financial advice could reduce but not eliminate preexisting differences in wealth, most importantly those by race.

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Figure 1. Conceptual model of social determinants and financial outcomes of financial literacy and advice-seeking

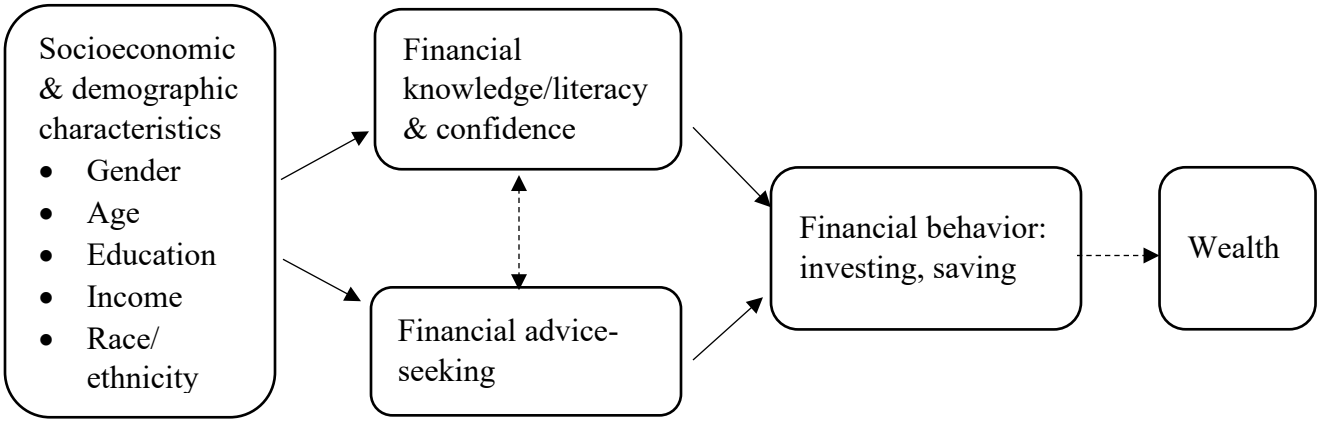

Table 1. Predicted relationships between predictors, mediators and financial behavior

	Literacy/confidence	Advice-seeking	Saving/investing
Predictors			
Demographic			
Gender	Men more than women	Women more than men	?
Race	Whites more than non-whites	Same	Same
Age	Middle-aged more than young and old	Old more than middle-aged and young	Middle-aged more than young and old
Socioeconomic			
Income	Increases with income	Same	Same
Wealth/inheritance	Increases with wealth	Same	Same
Education	Increases with education	Same	Same
Mediators			
Literacy			Literacy increases saving/investing
Confidence			Confidence increases saving/investing
Advice			Advice increases saving/investing

Table 2: Summary statistics*

	Mean	Std. Err.	Min	Max
disposable household income (dhi)	84502.38	1730.22	-6.74e+07	8.12e+07
dhi, inverse hyperbolic sine (ihs)	11.54291	.0195729	-18.71885	18.90592
financial literacy score (FL)	2.227128	.0115281	0	3
professional source of information used for borrowing and/or investing (advice)	.6194974	.0080705	0	1
confidence into own financial knowledge, centered (confid)	-1.24e-07	.0321753	-7.257569	2.742431
confidence into own financial knowledge	7.25769	.0321753	0	10
race: White	.6988761	.0088385	0	1
race: Black	.1296351	.0063047	0	1
race: Hispanic	.1109449	.0059486	0	1
race: other	.0605439	.0044742	0	1
education: High School or less	.2926504	.006988	0	1
education: some College	.2799173	.0060189	0	1
education: BA or more	.4274323	.0082764	0	1
gender	.5060903	.0071833	0	1
age	51.92526	.0678672	18	95
value of risky investment assets (riskyInv)	454877.1	13006.29	0	2.01e+09
riskyInv (inverse hyperbolic sine)	7.731972	.0853737	0	22.11641
riskyInv (dummy)	.6515898	.0067678	0	1
financial and non-financial Investments (InvestAssetsFN)	808029	19469.38	0	2.25e+09
InvestAssetsFN (inverse hyperbolic sine)	9.564577	.0712066	0	22.22817
InvestAssetsFN (dummy)	.8069499	.0051823	0	1
financial investments (InvestAssetsF)	510933.5	13856.16	0	2.24e+09
InvestAssetsF (inverse hyperbolic sine)	9.040651	.0741418	0	22.22424
InvestAssetsF (dummy)	.7848491	.0055631	0	1
value of saving accounts (risk_free_saving)	56056.36	2912.307	0	3.66e+08
risk_free_saving (inverse hyperbolic sine)	5.97827	.0757707	0	20.41105
risk_free_saving (dummy)	.6100813	.0071195	0	1
Number of Observations (without imputations)	4595			

*All values are weighted with household weight and 999 replicate weights to account for multiple imputations.

Legend for tables 2-6:

1. save=value of saving accounts (risk-free); inverse hyperbolic sine (ihs) transformation; Tobit estimation with left censored at 0; OLS regression; Linear Probability Model (LPM).
2. investF= value of financial investments: financial investments + private pensions + life insurance + money market + CDs + occupational pensions; inverse hyperbolic sine (ihs) transformation; Tobit estimation with left censored at 0.
3. investFN= investF + business equity + value of real estate other than principal residence; inverse hyperbolic sine (ihs) transformation; Tobit estimation with left censored at 0.
4. risky= value of risky investment assets: (financial investments + private pensions + occupational pensions) - (saving bonds + state or municipal bonds, or other tax free bonds + U.S. Government bonds or Treasury bills); inverse hyperbolic sine(ihs) transformation; Tobit estimation with left censored at 0.
5. confi=confidence into own financial knowledge (0-10), centered.
6. advice = dummy variable: professional source of information used for borrowing and/or investing decision
7. FL=financial literacy score (values 0,1,2,3)

Table 3: Generalized structural equation model estimates of relationships between exogenous and intervening variables (OLS & LPM)

	OLS	LPM	OLS
	FL	advice	confid
Disp. income (ihs)	0.037***	0.023***	0.089**
	(0.008)	(0.006)	(0.027)
race: black	-0.213***	-0.123***	-0.098
	(0.031)	(0.019)	(0.093)
race: hispanic	-0.094**	-0.128***	-0.522***
	(0.029)	(0.020)	(0.082)
race: other	0.007	-0.045	-0.165
	(0.036)	(0.029)	(0.138)
educ: some college	0.202***	0.023	0.402***
	(0.025)	(0.018)	(0.083)
educ: BA or more	0.535***	0.167***	0.850***
	(0.027)	(0.018)	(0.072)
gender	-0.289***	0.028*	-0.120*
	(0.021)	(0.013)	(0.058)
age in years	0.001	0.002***	0.021***
	(0.001)	(0.000)	(0.002)
Constant	1.630***	0.176*	-2.467***
	(0.096)	(0.078)	(0.311)
N	4,595	4,595	4,595

Table 4: Generalized structural equation model estimates of predictors of financial behavior (Tobit)

	Tobit	Tobit	Tobit	Tobit
	save	investF	investFN	risky
Disp. income (ihs)	0.395***	0.531***	0.535***	0.712***
	(0.098)	(0.110)	(0.112)	(0.158)
race: black	-3.990***	-2.473***	-2.314***	-2.334***
	(0.385)	(0.314)	(0.315)	(0.377)
race: hispanic	-3.823***	-3.468***	-2.958***	-4.166***
	(0.388)	(0.262)	(0.276)	(0.363)
race: other	-1.121*	-0.369	-0.028	-0.335
	(0.501)	(0.388)	(0.318)	(0.541)
educ: some college	2.005***	2.337***	2.164***	3.046***
	(0.307)	(0.243)	(0.233)	(0.366)
educ: BA or more	4.116***	4.492***	4.117***	5.917***
	(0.288)	(0.219)	(0.223)	(0.302)
gender	-0.113	-0.801***	-0.962***	-1.038***
	(0.229)	(0.178)	(0.172)	(0.239)
age in years	0.000	0.024***	0.026***	0.028***
	(0.007)	(0.006)	(0.006)	(0.008)
FL	1.025***	1.160***	1.057***	1.588***
	(0.159)	(0.122)	(0.121)	(0.183)
advice	2.118***	2.047***	2.042***	2.523***
	(0.243)	(0.189)	(0.189)	(0.280)
confid	0.319***	0.364***	0.404***	0.491***
	(0.062)	(0.050)	(0.051)	(0.071)
Constant	-5.387***	-4.270**	-3.335*	-10.866***
	(1.254)	(1.342)	(1.361)	(1.926)
/				
var(e.FL)	0.559***	0.559***	0.559***	0.559***
	(0.011)	(0.011)	(0.011)	(0.011)
var(e.advice)	0.221***	0.221***	0.221***	0.221***
	(0.002)	(0.002)	(0.002)	(0.002)
var(e.confid)	4.296***	4.296***	4.296***	4.296***
	(0.096)	(0.096)	(0.096)	(0.096)
cov(e.FL,e.advice)	0.042***	0.042***	0.042***	0.042***
	(0.006)	(0.006)	(0.006)	(0.006)
cov(e.FL,e.conf)	0.127***	0.127***	0.127***	0.127***
	(0.027)	(0.027)	(0.027)	(0.027)
cov(e.advice,e.confi)	0.103***	0.103***	0.103***	0.103***
	(0.014)	(0.014)	(0.014)	(0.014)
var(e.save)	47.677***			
	(1.359)			
var(e.investF)		26.615***		
		(0.868)		
var(e.investFN)			25.918***	
			(0.820)	
var(e.risky)				48.019***

				(1.454)
N	4,595	4,595	4,595	4,595

Bootstrap standard errors in parentheses (using 999 replicate weights); multiple-imputation estimates (5 implicates).
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 5: Generalized structural equation model estimates of predictors of financial behavior (LPM)

	LPM	LPM	LPM	LPM
	save	investF	investFN	risky
Disp. income (ihs)	0.021***	0.025***	0.025***	0.035***
	(0.004)	(0.005)	(0.005)	(0.007)
race: black	-0.209***	-0.131***	-0.127***	-0.098***
	(0.022)	(0.022)	(0.022)	(0.021)
race: hispanic	-0.210***	-0.222***	-0.199***	-0.211***
	(0.021)	(0.017)	(0.018)	(0.018)
race: other	-0.089**	-0.038	-0.024	-0.019
	(0.032)	(0.025)	(0.019)	(0.031)
educ: some college	0.122***	0.145***	0.131***	0.141***
	(0.018)	(0.017)	(0.016)	(0.019)
educ: BA or more	0.206***	0.223***	0.198***	0.278***
	(0.017)	(0.015)	(0.014)	(0.016)
gender	0.012	-0.025*	-0.034**	-0.038**
	(0.014)	(0.013)	(0.011)	(0.014)
age in years	-0.001*	-0.000	-0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
FL	0.052***	0.054***	0.048***	0.074***
	(0.010)	(0.009)	(0.009)	(0.010)
advice	0.106***	0.104***	0.097***	0.119***
	(0.016)	(0.013)	(0.012)	(0.015)
confid	0.012**	0.014***	0.016***	0.021***
	(0.004)	(0.003)	(0.003)	(0.004)
Constant	0.158*	0.241***	0.297***	-0.099
	(0.062)	(0.065)	(0.064)	(0.093)
/				
var(e.FL)	0.559***	0.559***	0.559***	0.559***
	(0.011)	(0.011)	(0.011)	(0.011)
var(e.advice)	0.221***	0.221***	0.221***	0.221***
	(0.002)	(0.002)	(0.002)	(0.002)
var(e.confid)	4.296***	4.296***	4.296***	4.296***
	(0.096)	(0.096)	(0.096)	(0.096)
cov(e.FL,e.advice)	0.042***	0.042***	0.042***	0.042***
	(0.006)	(0.006)	(0.006)	(0.006)
cov(e.FL,e.conf)	0.127***	0.127***	0.127***	0.127***
	(0.027)	(0.027)	(0.027)	(0.027)
cov(e.advice,e.conf)	0.103***	0.103***	0.103***	0.103***
	(0.014)	(0.014)	(0.014)	(0.014)
var(e.save)	0.202***			
	(0.003)			
var(e.investF)		0.131***		
		(0.003)		
var(e.investFN)			0.123***	
			(0.003)	
var(e.risky)				0.171***

				(0.003)
N	4,595	4,595	4,595	4,595

Bootstrap standard errors in parentheses (using 999 replicate weights); multiple-imputation estimates (5 implicates).
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 6: Generalized structural equation model estimates of predictors of values in specified financial categories - conditional on participation

	OLS	OLS	OLS	OLS
	c_save	c_investF	c_inveFN	c_risky
Disp. income (ihs)	0.100**	0.206***	0.207***	0.167***
	(0.038)	(0.051)	(0.053)	(0.046)
race: black	-1.010***	-0.937***	-0.768***	-0.961***
	(0.129)	(0.130)	(0.116)	(0.138)
race: hispanic	-0.514**	-0.483***	-0.248*	-0.150
	(0.161)	(0.134)	(0.125)	(0.144)
race: other	0.365*	0.247	0.430**	0.099
	(0.168)	(0.152)	(0.146)	(0.164)
educ: some college	0.000	0.529***	0.519***	0.732***
	(0.138)	(0.118)	(0.127)	(0.134)
educ: BA or more	1.212***	1.738***	1.645***	1.632***
	(0.124)	(0.120)	(0.122)	(0.156)
gender	-0.425***	-0.554***	-0.603***	-0.545***
	(0.085)	(0.077)	(0.081)	(0.078)
age in years	0.020***	0.034***	0.034***	0.039***
	(0.003)	(0.003)	(0.003)	(0.003)
FL	0.308***	0.547***	0.511***	0.428***
	(0.064)	(0.064)	(0.064)	(0.058)
advice	0.652***	0.798***	0.871***	0.634***
	(0.101)	(0.092)	(0.089)	(0.096)
confi	0.195***	0.221***	0.232***	0.168***
	(0.028)	(0.023)	(0.022)	(0.020)
Constant	5.323***	4.154***	4.532***	4.883***
	(0.499)	(0.631)	(0.658)	(0.563)
/				
var(e.FL)	0.559***	0.559***	0.559***	0.559***
	(0.011)	(0.011)	(0.011)	(0.011)
var(e.advice)	0.221***	0.221***	0.221***	0.221***
	(0.002)	(0.002)	(0.002)	(0.002)
var(e.conf)	4.296***	4.296***	4.296***	4.296***
	(0.096)	(0.096)	(0.096)	(0.096)
cov(e.FL,e.advice)	0.042***	0.042***	0.042***	0.042***
	(0.006)	(0.006)	(0.006)	(0.006)
cov(e.FL,e.conf)	0.127***	0.127***	0.127***	0.127***
	(0.027)	(0.027)	(0.027)	(0.027)
cov(e.advice,e.confi)	0.103***	0.103***	0.103***	0.103***
	(0.014)	(0.014)	(0.014)	(0.014)
var(e.save)	4.803***			
	(0.192)			
var(e.investF)		4.955***		
		(0.193)		
var(e.investFN)			5.284***	
			(0.197)	
var(e.risky)				3.948***
				(0.180)

N	4,595	4,595	4,595	4,595

Bootstrap standard errors in parentheses (using 999 replicate weights); multiple-imputation estimates (5 implicates).
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
Legend: d_save, d_investF, d_inveFN, d_risky are conditional on participation (natural log-transformed)

Appendix 1: The Survey of Consumer Finance questions on financial literacy

1) Do you think that the following statement is true or false: buying a single company's stock usually provides a safer return than a stock mutual fund?

True

False (correct answer)

Do not know

Refused

2) Suppose you had $100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow: more than $102, exactly $102, or less than $102?

More than $102 (correct answer)

Exactly $102

Less than $102

Do not know

Refused

3) Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, would you be able to buy more than today, exactly the same as today, or less than today with the money in this account?

More than today

Exactly the same

Less than today (correct answer)

Do not know

Refused

Appendix 2: The Survey of Consumer Finance question on confidence

Some people are very knowledgeable about personal finances, while others are less knowledgeable about personal finances. On a scale from zero to ten, where zero is not at all knowledgeable about personal finance and ten is very knowledgeable about personal finance, what number would you (and your {husband/wife/partner}) be on the scale?

0. *NOT AT ALL KNOWLEDGEABLE ABOUT PERSONAL FINANCE
1.
2.
3.
4.
5.
6.
7.
8.
9.
10. *VERY KNOWLEDGEABLE ABOUT PERSONAL FINANCE