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HOUSEHOLD FINANCE: A REVIEW OF RISK PREFERENCES AND BELIEFS IN SHAPING HOUSEHOLD FINANCIAL DECISIONS

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ABSTRACT

Purpose: Household financial decisions are complex, heterogeneous, interdependent and integral to the effective functioning of financial markets. The purpose of this study is to present an overview of household finance with respect to the determinants of the composition of household assets and liabilities, risk preferences and beliefs.

Design/Methodology: As a review study, this paper asks and attempts to provide answers to specific questions. Why is household finance an important academic field of study? What are the main components of household assets and liabilities? Who are the owners of tangible assets and what factors determine allocation of wealth between real and financial assets? What is the framework for characterizing risk aversion?

Findings: The findings are as follows. Household assets and liabilities are driven by risk preferences, beliefs or expectations and other factors. Household assets consist of human capital and tangible assets. Tangible assets consist of real assets and financial assets. Risk preference is sensitive to wealth levels, consumption commitments, gender, intellectual ability, background risk, past experiences, age, and other personal attributes of households. Time-varying risk aversion has also been used to describe evolution of asset prices, including the equity premium and stock returns volatility. Habit formation models rationalize consumption smoothing thus indicating why market volatility has historically outweighed aggregate consumption variability.

Originality: Household finance is a growing sub-field of finance and as such, a review of this sort, with added perspectives from developing countries, adds to the growing literature.

Key Words: Household finance, household assets and liabilities, risk preferences and beliefs, habit formation models.

JEL: G50, G51, G52, G53

Introduction.

Households are central to the comprehension of finance both as an economic force and as an academic field. Campbell (2006) invented the term "household finance" for the field of finance that considers how households utilize financial instruments, markets and institutions to accomplish their objectives. Households' pivotal role is visible in the circular flow of income through savings, investing and borrowing decisions in modern open economies. Households rely on financial instruments on many occasions. Payments for goods and services are typically effected via cash, transfers, cheques and credit cards. Resources are transferred intertemporally to invest in physical property, financial instruments and human capital, or to finance present and future consumption. Households need to manage the risks related to their health and possessions. Thus, savings vehicles, payment choices, debt financing and insurance contracts that require knowledge become natural necessities. In order to make informed optimal choices, households can directly engage in information acquisition or can rely on third party advice and expertise. Two questions then arise from the forgoing. How should households make all these decisions? How do they choose in reality?

The domain of the first question and related is normative while the latter belongs to the positive domain of economic science. Normative household finance delves with the study of how households should choose when faced with the task of managing their finances. While in many

situations, it may be expedient to expect that actual household behaviour does not deviate from what normative models prescribe, this is not always the case when it comes to making complex financial decisions. Thus, normative models may be construed as vital benchmarks against which to gauge the optimality of household financial decisions.

Positive household finance, on the other hand, delves into actual financial decisions taken by households and compares them with the prescriptions made by normative models. When deviations are as a result of mistakes or errors, then financial education is the natural remedy. However, when the deviations are as a result of behavioural biases, then the benchmarking role of normative models is challenged.

The purpose of this study is to review the evolution and advances of household finance with particular reference to its relationship with other established fields of finance, such as asset pricing and corporate finance. The study is inspired by recent advances in household finance as documented in studies such as Gennaioli, Shleifer and Vishny (2015) Andersen, Campbell, Nielsen and Ramadorai (2020), Foltyn (2020), Levine, Lin, and Xie (2020), Gomes, *et al* (2020) and Xiao and Tao (2021). The study contributes to the literature by attempting to update the evidence on the composition of household assets and liabilities, the determinants of risk preferences or aversion, and the impact of habit formation models on household consumption-investment decisions.

The forces driving the vibrancy of household finance as a separate sub-field of finance include the increasing relative size of household assets and liabilities to corporate assets and liabilities in the financial industry; household specific financial decision situations (such as deciding on forms of debt, means of payment, insurance contracts, financial intermediaries), not captured in both asset pricing and corporate finance studies; the relevance of institutional environments for influences on specific household financial behaviours; financial sophistication; and specific regulatory interventions (Guiso and Sodini, 2013; Heimer, *et al*, 2019).

The rest of this paper is divided into five sections. Section one provides some realities about household assets and liabilities. Section two captures the review of risk preferences and beliefs of households from the theoretical and empirical literature. Section three discusses the study methodology and restates the research questions. Section four captures the main findings. Section five concludes with summary of findings and recommendations for further studies.

1.0. Facts About Household Assets and Liabilities

Basic questions on household assets and liabilities include: Who owns household assets? What is the composition of household portfolios? How do households conduct the asset allocation and security selection decisions in their portfolio optimization? Which liabilities are dominant in household balance sheets?

Households' lifetime wealth consists of human capital and tangible assets. Human capital is the main source of lifetime income for many households. Human capital is typically non-traded and carries substantial idiosyncratic and un-insurable risk. Human capital also accumulates slowly and is difficult to predict (Scharfstein, 2018).

Tangible assets constitute the other vital component of lifetime wealth of households. Tangible assets can be disaggregated into investments in real and financial assets.

1.1. Lifetime Wealth: Human Capital as a Component of Lifetime Wealth

Human capital refers to the inventory of individual attributes—such as skills, personality, education, and health and wellbeing—embodied in the ability to earn labour income. It can be defined as the present discounted value of the flows of disposable labour income that an individual expects to earn over the remaining lifetime. Formally, the stock of human capital H_a of a household of age a is given by:

$$H_a = E_a \sum_{\tau=a}^{T} DF\, \gamma_{a+\tau} \quad (1)$$

Where $\gamma_{a+\tau}$ is (uncertain) labour income at age a + τ, DF the discount factor, T lifetime horizon and E_a the expectation operator at age a. The uncertain labour income, $\gamma_{a+\tau}$, follows a stochastic process driven by uncertainty about health conditions, career prospects, individual and aggregate productivity and related contingencies that affect future earnings. Human capital has a number of remarkable features that can potentially influence the way households select their financial portfolios, manage their transaction accounts, buy insurance, and access credit.

First, human capital is amassed gradually through formal education and/or working experience. Over the life-cycle, it reaches its highest level early in life and then declines as the number of earning years left and the flow of expected income decline. Extant lifecycle models in the economic literature rationalize how individuals and households attempt to smoothen their consumption spending over their entire life time (Scharfstein, 2018).

Second, human capital is difficult to quantify since it requires predicting earnings over the whole remaining lifetime, undoubtedly a daunting task given the uncertainty about future career prospects, health conditions, future individual and aggregate productivity, employments status, and any other contingency that might influence future earnings.

Third, human capital is not tradable and cannot be easily liquidated. This implies that human capital is hard to use as collateral and households cannot easily access credit markets in the absence of other forms of wealth. As a consequence, for most households and particularly for the poor, human capital represents the main component of their total wealth. The seminal work of Merton (1971, 1973) introduces an important framework for long-term financial planning given time-varying investment opportunities. Merton emphasizes that long-term investors must consider not only risks to their wealth, but also risks to the productivity of their wealth, that is, the reinvestment risk of wealth. This implies that long-term investors should hedge not only shocks to wealth itself, but also shocks to any state variable that predicts expected returns on wealth. Models in the Merton (1971, 1973) tradition assume that all wealth is held in a liquid, easily tradable form. However, a substantial part of household wealth is human capital, which is non-tradable. Put differently, households receive labour income but cannot sell claims to that income. If labour income is perfectly correlated with traded assets, and if households can short those assets, then households can hedge their labour income risk and undo the effects of labour income on their total portfolio (Campbell, 2006). In practice, however, much of the risk in labour income is idiosyncratic and therefore un-hedgeable. This background risk increases effective risk aversion and leads households to invest more cautiously (Bodie, Merton and Samuelson, 1992; Heaton and Lucas, 2000; Viceira, 2001; Regier and Rouen, 2020).

Finally, the uncertainty that typifies future earnings makes the return to human capital risky. Most importantly, human capital represents a source of background risk – a risk that an individual has to bear and cannot be avoided-since it cannot be typically insured outside the provisions offered by public unemployment insurance schemes in jurisdictions where they

exist, and it cannot be liquidated. An investor's risk-taking behaviour is affected by background risk and, by extension, portfolio choice. The return on human capital may also co-vary with the stock market, an issue that has recently received attention to try to explain the reluctance to invest in stocks. For instance, Paseda (2006) suggests that common stocks may be an effective hedge against expected inflation but not unanticipated inflation. Thus, to the extent that unanticipated inflation dominates with the correlation of common stock returns with human capital returns, then investor apathy to common stocks becomes inevitable. However, research evidence suggests that the return on human capital is uncorrelated (or, at least poorly correlated) with stock market returns. Hence, human capital can be viewed, from a portfolio allocation perspective, as a *risk-free bond*. This feature should affect the willingness to undertake financial risk and proves to be a critical factor for understanding portfolio rebalancing over the life-cycle (Campbell, 2006; Guiso and Sodini, 2013; Giannetti and Wang, 2016; Regier and Rouen, 2020).

Estimates of human capital from empirical work typically reveal the following patterns. Human capital is high for the young who still have a long working life ahead of them, and low for the old who will be soon, or have already, retired. It is higher for households with higher levels of education. In the United States, the value of human capital of a young person with a college degree is estimated at thrice that of a comparable individual with less than a secondary school education. Education not only influences the level but also the profile of human capital over the life-cycle. If earnings do not vary with age or grow little, as it is the case for individuals with low education, human capital peaks at the beginning of the working life and monotonically declines thereafter. If earnings grow very fast early in life, as happens with workers with high education, the peak in the stock of human capital may occur somewhat earlier over the life-cycle and decline thereafter.

Since human capital cannot be traded, liquidated, or used as collateral, most households accumulate tangible wealth mainly through savings. As a consequence, the proportion of household wealth held in human capital has a life-cycle pattern even more pronounced than that of human capital itself. For the typical household, human capital is the largest form of wealth early in life, when few savings have been accumulated. It progressively loses importance until retirement age when most households stop accumulating assets. Background risk is then particularly relevant for the young who have very little buffer savings and have still a long horizon over which earnings can be affected by persistent labour income shocks. Further insights can be gained by observing the ratio of human capital to total wealth over the life cycle. At the beginning of an individual's working life, the ratio is approximately one since labour income is the principal source of wealth. This proportion declines monotonically for all groups as they age for two reasons: commencement of savings and wealth accumulation in tangible assets, and potential decline in human capital. However, according to Guiso and Sodini (2013), the decline rate is much faster for households with higher education. At ages around 55, households with primary education have a stock of human capital that is still above 80% of total wealth, while, for those with college education, the fraction is around 60%. This is because more educated households face a faster declining stock of human capital and are able to accumulate tangible wealth faster (Bogan, 2015).

1.2. Lifetime Wealth: Tangible Assets as Components of Lifetime Wealth

Tangible assets can be categorized into two viz: real and financial assets. Real assets include residential, commercial and industrial property, durable goods (for example, cars and vehicles), valuables (paintings, jewelry, gold, and so on) and private business wealth (the value of the assets involved in privately owned businesses or entrepreneurial ventures). Financial assets include a very broad array of instruments ranging from cash and checking accounts, bonds, equities to sophisticated derivative securities. Real and financial assets differ in several dimensions.

Real assets are illiquid. Real estate and business wealth are characterized by a high degree of specificity with only a small fraction of the existing stock on sale at each point in time (Foltyn, 2020). Durables are characterized by large information asymmetries and are affected by the familiar lemons problem (Akerlof, 1970). Real assets thus involve high trading and legal costs, in addition to being taxed substantially in many countries (Paseda, 2020a).

The return on real assets is partially non-monetary. Residential property and durable goods provide consumption services on top of their own resale value and private business wealth involves large non-monetary private benefits (Badarinza, Balasubramaniam, and Ramadorai, 2019). This feature makes it difficult to estimate the expected return and riskiness of real assets.

Real assets have the distinguishing feature that they are under the direct control of the owner and do not involve promises and claims. On the contrary, financial securities are claims over the income generated by real assets owned or controlled by someone else than the security holder. Hence, financial assets embody a system of delegation of control that requires incentive contracts and monitoring mechanisms.

Financial assets are traded in markets typically more developed and liquid than real asset markets. Their number is very large and continuously increasing due to financial innovation. Since most financial assets are traded in organized markets, information on their past performance is public and is relatively easy to access.

Contrary to most real assets, financial securities differ greatly in complexity. The characteristics and the payoff structure of certain financial securities are extremely com-plex, and difficult to understand for many households. Additionally, information on the performance of financial assets is difficult to process and can be misleadingly interpreted. It is usual to characterize the allocation between real and financial assets and then among various classes of financial securities (Bogan, 2015).

In cross-section studies of distribution of tangible wealth amongst households, the empirical pattern shows a skewed distribution. The average wealth in the top decile of the population is over 5,000 times larger than the average in the bottom decile (Guiso and Sodini, 2013). Such ownership concentration implies an asymmetric impact on asset prices in the sense that movements in the asset demand of a relatively small group of investors are likely to have significant impact on asset prices. Frictionless neoclassical portfolio choice models predict that the portfolios of the rich are just a scaled-up version of the portfolios of the poor. Models that postulate habit formation preferences (e.g., Constantinides, 1990) or that integrate explicitly human capital (e.g., Regier and Rouen, 2020) imply that portfolio choice should instead depend on tangible wealth. Thus, uncovering the empirical relation between wealth and the portfolios of households is a vital matter in household finance.

Empirical research reveals interesting insights on the differences in assets' allocation across population wealth distribution. For example, Guiso and Sodini (2013) document that poor households have their wealth held substantially in cars and cash and very little in financial investments. The poor households tend to gravitate towards informal financial transactions which epitomize their deliberate non-participation in, or involuntary exclusion from, formal financial markets. The proportion of wealth held in "cars and cash" declines as wealth increases. For households in the intermediate wealth distribution, a dominant proportion of wealth is held in real estate, and remarkably, these intermediate wealthy households have a higher level of financial investments. Wealthy households have even more financial assets and a higher percentage of their wealth held in private businesses. Collectively, these asset classes represent almost half of the wealth of households in the top decile. Further, there is a sharp decline in the share of real estate which accounts for less than 50 percent of the wealth of the rich in the United States.

In terms of participation in ownership of assets across different asset classes, the most remarkable attribute of participation across asset classes is that participation rate increases as wealth increases. At the lowest fractile of the wealth distribution, participation is low in all asset classes, and at intermediate levels for cash and cars. The rich, instead, tend to participate in all markets and about 50 percent of the richest have private businesses.

The financial portfolio of households can be categorized into five assets classes namely, cash, fixed income instruments, equity, cash value life insurance, and other current financial assets. Participation across these assets classes is closely linked to wealth levels. The key features of household finances for the United States seem to extend to all developed countries according to Guiso and Sodini (2013) and Badarinza, Campbell and Ramadorai (2016).

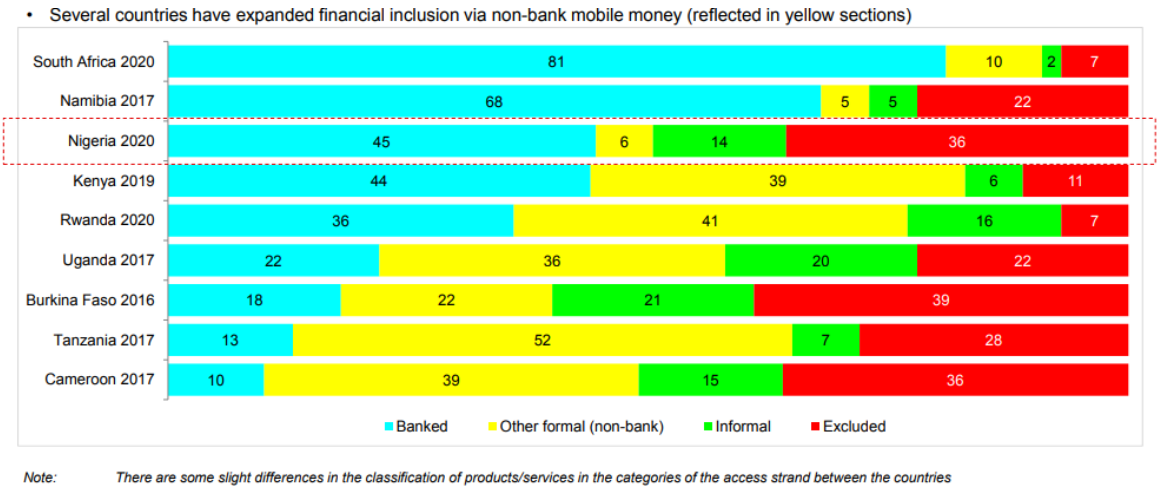
1.3. Household Liabilities

For many households in developed countries, access to the credit market is crucial to achieve a number of goals such as investing in human capital, smoothing consumption over time or purchasing a home early in life. Households can raise debt in a variety of ways. They can apply for a mortgage, use their credit card or obtain a consumer loan. There are a number of points worth noticing. First, different types of debt matter at different levels of wealth. Poorer households are less likely to have mortgage debt, whereas 70% of households above median wealth have a mortgage. Households in the third decile of wealth rely on student and consumer loans more than wealthier households. Reliance on credit card debt is higher for households within the second to the eighth deciles of the wealth distribution. Second, the way participation rates and debt-to-income ratios change with wealth is not uniform across categories. Participation increases with wealth for mortgages (quite steeply for relatively poor households). It is hump shaped for credit card and consumer debt, whereas it declines with wealth for education loans. Similar patterns hold for unconditional debt to income ratios. Conditional on participation, instead, debt to income ratios for personal loans tend to be higher for poorer households whereas the opposite pattern can be observed for mortgages.

Third, for users of mortgage, the richest half holds on average a mortgage at least twice as large as income. This pattern rationalizes the considerable academic attention that has been devoted to how households choose among mortgage types (for example, fixed versus variable rate). Finally, many households with intermediate levels of wealth hold both substantial liquid assets and personal loans in their balance sheets. As a result, they effectively pay very high interest rates without an apparent need for it (Olafsson and Pagel, 2018).

For many households in many developing countries like those of Africa, access to credit markets is constrained by a high degree of informality of the economies usually compounded by low levels of financial literacy (Koomson, Villano and Hadley, 2022). In addition, in contrast to developed countries where household debt may be highly sensitive to the level of interest rates, household borrowing in developing countries is less elastic to interest rates perhaps due to the fact that household debt requirement is more consumption-driven rather than by investment motives. Thus, consumer finance schemes are more appealing to these households. Further, inclusion in the formal financial system is typically a pre-requisite to accessing credit facilities from the formal financial service providers (Ozili, 2021). Figure 1 captures financial inclusion for selected African countries. Basic onboarding documentation requirements and physical access to formal financial service providers are problematic, compounded by huge infrastructural deficits including sparse credit rating information. This experience is, for instance, traceable to the colonial era for many African economies (Uche, 1996; Uche, 2003; Austin and Uche, 2003; Paseda, 2016). Historically, attempts to liberalize the credit market for Africans has been fraught with problems of non-performing loans (or bad credits) and costly bailouts thereby necessitating stringent recourse to accounting and internal controls (Uche, 1998; Gine and Kanz, 2018), similar to the evidence provided for India by Banerjee, *et al* (2015). As a result, household liabilities in such settings are composed of loans obtained in the informal sector such as from friends, family, traditional co-operative credit schemes for example, "*esusu*" (Oluyombo, 2013), and modern peer-to-peer crowdfunding schemes (Morse, 2015; Tang, 2019), for which reliable data remain elusive in less-developed economies.

Figure 1: Access to formal financial services in Selected African Countries



Source: World Bank, EFinA.

Generally, examining household balance sheets allows for better identification of the level of debt held by financially fragile households. Important metrics such as debt servicing ratio, loan-to-value ratio and debt-to-household-income ratio can be utilized to gauge the constraints imposed on households as a result of indebtedness (Bursztyn, *et al*, 2019).

2.0. Literature Review and Theoretical Framework

2.1. Preferences and Beliefs

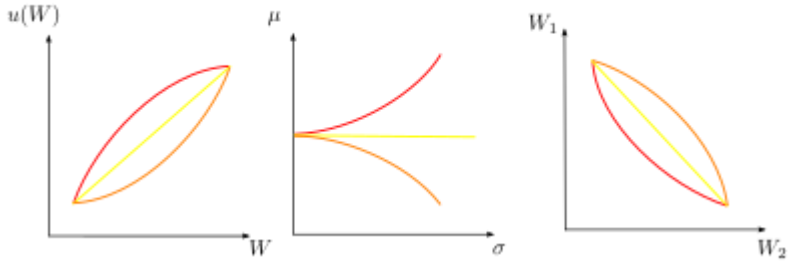
Understanding investors' risk preferences has several implications. First, it provides a guiding framework for the calibration of optimal portfolio choice models. Second, it offers empirical

micro-foundations for asset pricing models with heterogeneous agents. Third, it contributes to the asset pricing debate on time-varying risk aversion. Fourth, it permits the estimation of the welfare costs of financial mistakes by households such as under-diversification, non-participation in financial and insurance markets. Finally, it engenders financial intermediaries' conformity with investor protection regulations that require the measurement of risk preferences before providing financial advisory services to clients (Stango and Zinman, 2009). Risk preferences are fundamental to theories of financial portfolio choice that build on the standard Von Neumann-Morgenstern expected utility framework (Stango and Zinman, 2009). These models draw a direct relation between the fraction of financial wealth invested in risky assets—the portfolio risky share—and risk preferences. In the classical Merton (1969) model of consumption and portfolio choice, investor *i*'s optimal risky share ω_i is defined as a measure of the expected risk premium divided by the product of a measure of risk-aversion (such as the famous Arrow-Pratt measure of relative risk aversion) and volatility of risky asset's return. A common axiom in the asset pricing literature, inspired by the fact that investors have to hold the market portfolio in the aggregate, is that beliefs about risky assets are the same for all investors, so that the expected risk premiums and volatilities are same. Thus, the model yields the amazing implication that all heterogeneity in observed portfolio shares are explainable by differences in risk attitudes. Several theories build on this framework to clarify the determinants of relative risk aversion coefficient. For instance, within the expected utility framework, if individual preferences display constant relative risk aversion (CRRA), wealthy and poor investors should all have the same share of wealth invested in risky assets, ω_i. Conversely, if investors display declining relative risk aversion (DRRA), then wealthier investors should invest a larger fraction of their wealth in risky assets.

Scholars have followed two broad approaches to measuring risk preferences viz: *revealed preference approach* and *elicitation of risk preferences* from household behaviours in experiments and answers to questionnaires.

Figure 2 captures the different possible risk preferences of households. Risk aversion (red) contrasted to risk neutrality (yellow) and risk loving (orange) in different settings. The left graph shows that risk-averse utility function is concave while a risk tolerant function is convex. The middle graph shows that in standard deviation-expected value space, the utility function of a risk averse agent is upwardly sloped. The last (right) graph indicates that with fixed probabilities across two alternative states 1 and 2, the risk averse function over pairs of state-contingent outcomes is convex.

Figure 2: Characterizing Risk Preferences



Source: Author's review of the literature.

The rest of this sub-section summarizes the two approaches and explores the literature on the determinants of risk preferences.

2.2. Measuring Individual Risk Aversion

1. The Revealed Preference Approach (RPA): In a path-breaking paper, Friend and Blume (1975) infer relative risk aversions from the household portfolio risky shares reported in surveys of the Federal Reserve Board.

According to Friend and Blume (1975), the risk aversion measure is given by:

$$\gamma_i = \frac{E\, r_i^e}{\omega_i \sigma_i^2} \qquad (2)$$

Where γ_i is the measure of risk aversion, Er_i^e is the expected risk premium (compensation for risk bearing), ω_i is the optimal share of wealth in risky assets and σ_i^2 is the variance of the risky assets' return.

To reiterate the risky share, ω_i, mentioned earlier:

$$\omega_i = \frac{E\, r_i^e}{\gamma_i \sigma_i^2} \qquad (3)$$

Guiso and Sodini (2013) implement the Friend-Blume methodology by using the 2007 US Survey of Consumer Finances (SCF) and the 2007 Swedish Wealth Registry and obtain the following results. The estimates are obtained by assuming that the expected excess return Er_i^e and volatility σ_i^2 are the same for all investors and are calibrated to the historical stock market estimates of 6.2% and 20%, respectively. The results are remarkably stable across the two countries. The median value of the relative risk aversion parameter γi is 3.5 in the US and 3.8 in Sweden. In both countries, more than three-fourth of households have a coefficient of relative risk aversion below 10—the maximum value considered plausible by Mehra and Prescott in their 1985 seminal paper on the equity premium puzzle. Coefficients many times > 10 are needed to justify the size of stock market risk premia around the globe. Nevertheless, it is important to bear in mind that the Friend-Blume approach is likely to understate risk aversion for at least two reasons. First, it assumes independently identically distributed returns and thus uses short-run asset volatility as a proxy for long-run volatility. Second, it does not account for human capital which is of dominant importance for most households.

Further, there is an underlying assumption that all households invest the risky share of their financial wealth in the same fully diversified portfolio that replicates the market portfolio. The

composition of many real-world household portfolios violates this assumption and thus could yield incorrect estimates of the risk aversion coefficient.

2. Elicitation of Risk Preferences: An alternative strategy to the RPA is to elicit risk aversion parameters from specifically outlined questions asked in household surveys, or laboratory and field experiments. Researchers have been using qualitative or quantitative indicators in designing experiments and questionnaires.

Qualitative Indicators

This approach is commonly used in psychology, where individual attitudes towards risk, viewed as a personality trait, are measured using for instance Zuckerman "sensation seeking" scales. Qualitative questions meant to capture individual risk aversion are now often asked in economist questionnaires. For instance, investors in surveys are asked the question: "How would you classify risk among the following two alternatives? (1) Risk is an uncertain event from which one can extract a profit; (2) Risk is an uncertain event from which one should seek protection." This allows distinguishing investors who view risk as a danger from those who view it as an opportunity. The latter should, presumably, be more risk tolerant.

In a context closer to financial choices, the SCF elicits risk attitudes by asking individuals: "Which of the following statements comes closest to the amount of financial risk that you are willing to take when you make your financial investment? (1) Take substantial financial risks expecting to earn substantial returns; (2) Take above average financial risks expecting to earn above average returns; (3) Take average financial risks expecting to earn average returns; (4) Not willing to take any financial risks".

Quantitative Measures

Quantitative measures try to deal with these issues by asking individuals to choose among specific risky choices and by eliciting their degree of relative risk aversion γi, under the assumption that they behave as expected utility maximizers. The inferred quantitative measures obtained in studies should be considered estimates of the risk aversion parameters of the respondents' value functions, and should then depend on variables that affect willingness to take on risk, such as wealth and proxies for background risk. Since questions on risk aversion are typically included in general economic surveys, quantitative measures can be related to household observables to study the properties of the risk aversion function, in particular how it relates to wealth, stable demographic characteristics and the economic environment (Mumtaz and Smith, 2021). Furthermore, since general surveys collect data on financial risk taking, one can test the predictive power of these measures on observed financial choices.

However, these quantitative measures of risk aversion are fraught with limitations too. First, when asked about willingness to pay, individuals tend to underreport, which overestimates their true risk aversion. Second, answers may be affected by how questions are framed. Third, the validity of this methodology rests on the assumption that respondents know how they would behave in hypothetical settings and that they are willing to reveal their choices truthfully (Kahneman and Tversky, 1979). Additionally, it is not clear that risk preferences elicited in hypothetical settings reflect individual risk attitudes to actual financial decisions.

Some of these drawbacks can be addressed by changing the elicitation instrument. Holt and Laury (2002) propose a strategy that has proven particularly successful in overcoming the under-reporting bias related to questions on willingness to pay. They ask subjects to

sequentially choose between pairs of lotteries that differ in riskiness. The degree of risk aversion is identified when respondents switch from the riskier to the safer alternative as the expected payoffs change. Holt and Laury (2002) also show that individuals are less risk averse when answering hypothetical choices than when choosing between prospects involving real money, particularly when large stakes are involved.

Notwithstanding the differences in methodologies and approaches, all studies reach two shared conclusions. First, the vast majority of individuals dislike risk, second, risk tolerance varies considerably across individuals. This large heterogeneity in risk preferences may thus be an important element in explaining the (large) observed dissimilarities in individual financial decisions.

2.3. Determinants of Risk Attitudes

Assuming that relative risk aversion depends on financial wealth Wi according to:

$$\gamma_i = \frac{\lambda_i}{W_i^{\vartheta}} \quad (4)$$

Where λ_i is an individual fixed effect that captures unobserved preference for risk bearing. A value of ϑ = -1 characterizes constant absolute risk aversion preferences (CARA), a value of ϑ = 0 represents constant relative risk aversion (CRRA). Values of between minus one and zero correspond to increasing relative risk aversion (IRRA) and decreasing absolute risk aversion (DARA). Values above zero imply both decreasing relative risk aversion (DRRA) and decreasing absolute risk aversion (DARA).

Wealth or networth is a major determinant of risk attitude. In terms of risk aversion and networth, there is a consensus amongst scholars and practitioners that absolute risk aversion declines with wealth (ϑ > -1), but there is less agreement on how relative risk aversion changes with wealth. Yet, this relation is critical for the determination of the market risk premium and how it evolves over time. Empirical work has so far embraced two strategies to study the variation of risk aversion with respect to wealth. The first uses the revealed preference approach and studies how portfolio risky shares respond to variations in household financial wealth. The second instead uses measures of risk aversion directly elicited through surveys.

In the revealed preference approach, the equations (3) and (4) are typically combined and log transformed to yield the following cross-sectional regression:

$$ln\ \omega_i = \delta_i + \vartheta\ lnW_i + \varepsilon_i \quad (5)$$

$$\text{Given, } \delta_i = \ln \frac{r_i^e}{\lambda_i \sigma_i^2} \quad (6)$$

Where δ_i is an individual fixed effect that captures unobservable risk preferences, investor beliefs and other attributes. The parameter ϑ measures the wealth elasticity of the portfolio risky share. A large literature initiated by Friend and Blume (1975) is based on cross-sectional regressions at household level of the form:

$$ln\ \omega_i = \delta + \vartheta\ lnW_i + \varepsilon_i \quad (7)$$

Where δ is independent of i and can only control for latent variables that affect all the observations in the sample. In many panel regressions (across countries and over different periods of time), the estimates of ϑ are estimated to be positive, thereby supporting the

hypothesis that the average investor has DRRA preferences (Calvet, Campbell and Sodini, 2007; Campbell, Ramadorai and Ranish, 2019; Vestman, 2019; Das, Kuhnen and Nagel, 2020; Fagereng, Gottlieb, and Guiso, 2017; Fagereng, Guiso, Malacrino and Pistaferri, 2020; Black, *et al*, 2020; and Song, Wu and Zhou, 2020).

Chiappori and Paiella (2011, **CP**) and Brunnermeir and Nagel (2008, **BN**) run panel data regressions of the equation form:

$$ln\ \omega_{i,t} = \delta_{i,} + \vartheta\ lnW_{i,t} + \varepsilon_{i,t} \quad (8)$$

Both studies (**CP** and **BN**) find no evidence of a link between wealth and risk-taking.

Two major challenges are inherent with the use of panel regressions to detect the wealth elasticity of portfolio risky share. First, the researcher needs to distinguish between portfolio share passive differences induced by market movements, and active differences that are the result of portfolio rebalancing by households. This requires well detailed data with information on each household portfolio position to track how the value of risky securities changes over time. Second, current financial networth is likely to depend on past portfolio allocation decisions when households exhibit inertia in portfolio rebalancing. As a result, the coefficient estimate is biased because financial wealth is an endogenous variable in the regression. To illustrate this issue, consider a household that benefits from a substantial pay rise. Unless the household rebalances its portfolio immediately, its financial wealth increases and its portfolio risky share mechanically shrinks. To the eyes of the econometrician, the increase in financial wealth appears to have a negative effect on the risky share until the household adapts to the new standard of living and rebalances its portfolio accordingly. Thus, to address both issues requires distinguishing active and passive variations in portfolio shares by utilizing the information on individual securities and employing an identification strategy that captures portfolio information of households or investors with many common attributes (e.g., initial endowments, genes, ability, upbringing and communication).

Apart from wealth, risk attitudes have been theorized to be determined by other factors (or attributes) such as *consumption commitments* (Grossman and Laroque, 1990; Postlewaite, *et al*, 2008; Aydilek and Aydilek, 2020; Harmenberg and Oberg, 2021), *gender* (Paola, 2013; Fagereng, Gottlieb and Guiso, 2017; Andreoni, *et al*, 2020; Li, Song, Xu and Yi, 2022), *patience* (Brunette and Jacob, 2019), *intellectual ability* (Andreoni, *et al*, 2020; Harrison, *et al*, 2020; Munoz-Murillo, *et al*, 2020), *hereditary factors*/*background risk* (Cocco, 2005; Heaton and Lucas, 2000), *past experiences* (Moya, 2018; Sane, 2019; Kuratko, *et al*, 2020), age (Kesavayuth, Ko and Zikos, 2018), *height* and *fathers' impact on children* (Paola, 2013; Andreoni, *et al*, 2020). Specifically, some studies provide evidence that female investors, more patience persons, low-IQ persons, people whose parents worked in the public sector (contrasted from those whose parents were entrepreneurs) tend to be more risk-averse than their other counterparts (Paola, 2013; Atalay, Li, and Whelan, 2021; Blasio, *et al*, 2021, Brunette and Jacob, 2019, Sakha, 2019, Dohmen, *et al*, 2011).

2.4. Time-Varying Risk Aversion

From Fama (1984), Campbell and Cochrane (1999), Bansal and Yaron (2004), Fagereng Gottlieb and Guiso (2017), Vestman (2019), Black, *et al* (2020), Fagereng, *et al* (2020) to Blasio, *et al* (2021), time-varying risk aversion has been used to rationalize stylized facts about asset prices such as the size of the equity premium and the volatility of stock returns. This line of literature hypothesizes DRRA preferences that have a habit formation element.

Constantinides (1990) attempts to unravel Mehra and Prescott's equity premium puzzle by removing their hypothesis of non-complementarity of preferences for consumption over time (that is, additive utility). By adding habit formation, Constantinides theorizes an additive utility function of consumption over time where the utility of consumption at each date takes the form $(C_t - Y_t)\gamma$ and Y_t equals an exponentially weighted average of past consumption C_0, C_1, C_2,...,C_{t-1}. Y_t can be regarded as the subsistence level of consumption at date t, below which the household/investor will not allow to fall. This subsistence level embodies habit formation because it is a growing function of past consumption levels. This leads to a smoothing of consumption since the normal rise in the utility of consumption from greater utility is at least partially offset by a drop in the utility of future consumption from increasing the bar of the subsistence level. Consequently, there is reduced variability of the *aggregate consumption growth rate* relative to the *market portfolio return* variability, suggestive of a potential rationalization of the equity risk premium puzzle.

Calvet and Sodini (2014) directly test habit formation models on household portfolio allocation decisions by using proxies for habit, measured in US and Swedish data. In a large class of additive habit formation models, the optimal port-folio risky share ω_i and the financial wealth elasticity of the risky share ϑ_i are given by:

$$\omega_i = \omega_i^* \left(1 - \frac{\lambda_i X_i}{W_i}\right), \quad \vartheta = \frac{\lambda_i X_i}{W_i - \lambda_i X_i} \tag{9}$$

ω_i^* is the risky share the household with CRRA preferences would optimally choose. X_i is the habit, and λ_i is a constant. Investors with habit formation preferences care about maintaining their habit level over time. Here, low wealth level when compared to the habit, is accompanied with more risk averse propensity which manifests in less investments in risky assets. They also become more sensitive to changes in financial wealth (higher ϑ_i). Habit formation models embody four testable predictions. The portfolio risky share should decline with proxies for habit and rise with financial wealth. Additionally, the financial wealth elasticity of the risky share ϑ_i should not only be positive but also heterogeneous across investors. It is a declining function of financial wealth but an increasing function of habit.

3.0. Methodology

This paper is essentially a literature review of household finance in terms of the composition of assets and liabilities, risk preferences and beliefs and the determinants of risk aversion. It is a theoretical survey of the literature.

Along the lines specified, the following questions are posed and provided by this survey. First, what is household finance and why is it an important academic field of study? Second, what are the main components of household assets and liabilities? Third, who owns tangible assets and what factors determine wealth allocation between real and financial assets? Fourth, what is the theoretical framework for measuring risk aversion?

4.0. Main Findings

This study's main findings are as follows. Household assets and liabilities are driven by risk preferences, beliefs or expectations and other factors. Household assets consist of human capital and tangible assets. Tangible assets consist of real assets and financial assets. Risk preference is sensitive to wealth levels, consumption commitments, gender, intellectual ability, background risk, past experiences, age, and other personal attributes of households. Time-varying risk aversion has also been used to explain evolution of asset prices, including the equity premium and stock returns volatility. Habit formation models rationalize consumption smoothing thus indicating why market volatility has historically outweighed aggregate consumption growth rate.

Table I: Summary of Findings from the Empirical Literature

S/N	Research Question	Study/ Country	Methodology	Findings
1	What is household finance and why is it an important academic field of study?	Campbell (2006)/ United States	Presidential address to the American Finance Association. Literature review/ Conceptual review style of paper.	Household finance asks how households use financial instruments to attain their financial objectives. Household finance is an important distinct field - from asset pricing and corporate finance – because certain household financial behaviours are not modelled by the other established fields in finance.
		Guiso and Sodini (2013) / United States Also, Heimer, *et al* (2019)	Ordinary Linear Regressions/ Use of arithmetic proportions and quantiles.	Household finance studies how household financial decisions should be taken (normative) and how they are actually taken (positive). Household assets and liabilities have grown relative to corporate assets and liabilities. Household specific financial decision situations (such as deciding on forms of debt, means of payment, insurance contracts, financial intermediaries), not captured in both asset pricing and corporate finance studies; the relevance of institutional environments for influences on specific household financial behaviours; financial sophistication; and specific regulatory interventions
		Badarinza *et al* (2019) / Emerging economies such as China, India, Bangladesh, the Philippines, Thailand, and South Africa.	The authors present statistics on household balance sheets from official micro-surveys in countries constituting 45% of the global population: China, India, Bangladesh, the Philippines, Thailand, and South Africa.	Household finance is the study of how households do (and should) use financial instruments to attain their economic objectives.
2	What are the main components of household assets and liabilities?	Oluyombo (2013)/ Nigeria	Student t test and one-way analysis of variance. Data collected through questionnaires administered to 302 co-operative members in Ogun State, Nigeria.	Credits obtained from co-operatives were mostly utilized to finance the acquisition of real assets including durable consumer goods such as land, generator, television, radio and refrigerator by co-operative members.
		Stango and Zinman (2009) / United States	Cross-sectional regressions	Exponential growth bias - in the sense of the pervasive tendency to linearize exponential functions – matters empirically. More biased households demand more credit, save less, favour shorter maturities and use and benefit more from financial advisory.
3	Who owns tangible assets and what factors determine wealth allocation between real and financial assets?	Guiso and Sodini (2013) / United States	Ordinary Linear Regressions/ Use of arithmetic proportions and quantiles.	Poor households hold wealth in cars and cash and very little in financial investments. The poor households engage informal financial transactions which epitomize their deliberate non-participation in, or involuntary exclusion from, formal financial markets. The proportion of wealth held in "cars and cash" declines as wealth increases. For households in the intermediate wealth distribution, a dominant proportion of wealth is held in real estate, and remarkably, these intermediate wealthy households have a higher level of financial investments.

				Wealthy households have even more financial assets and a higher percentage of their wealth held in private businesses. Collectively, these asset classes represent almost half of the wealth of households in the top decile. Further, there is a sharp decline in the share of real estate which accounts for less than 50 percent of the wealth of the rich in the United States.
4	What is the framework for characterizing risk aversion?	Friend and Blume (1975) and Guiso and Sodini (2013)/ United States and Sweden	Theoretical model of the risk-averse function. Guiso and Sodini (2013) obtain data from the Survey of Consumer Finances, SCF, for Sweden and the United States.	Guiso and Sodini (2013) implement the Friend-Blume methodology by using the 2007 US Survey of Consumer Finances (SCF) and the 2007 Swedish Wealth Registry and obtain the following results. The estimates are obtained by assuming that the expected excess return Er_i^e and volatility σ_i^2 are the same for all investors and are calibrated to the historical stock market estimates of 6.2% and 20%, respectively. The results are remarkably stable across the two countries. The median value of the relative risk aversion parameter γi is 3.5 in the US and 3.8 in Sweden. In both countries, more than three-fourth of households have a coefficient of relative risk aversion below 10
	What determines risk aversion?	Several studies such as Grossman and Laroque (1990); Postlewaite, *et al* (2008); Aydilek and Aydilek (2020); Harmenberg and Oberg (2021) that rationalize aversion on the basis of consumption commitments.	Diverse methodologies	Risk aversion is determined by the level of wealth, *consumption commitments*, *gender* (Paola, 2013; Fagereng, Gottlieb and Guiso, 2017; Andreoni, *et al*, 2020; Li, *et al*, 2022), *patience* (Brunette and Jacob, 2019), *intellectual ability* (Andreoni, *et al*, 2020; Harrison, *et al*, 2020; Munoz-Murillo, *et al*, 2020), *hereditary factors*/*background risk* (Cocco, 2005; Heaton and Lucas, 2000), *past experiences* (Moya, 2018; Sane, 2019; Kuratko, *et al*, 2020), age (Kesavayuth, Ko and Zikos, 2018), *height* and *fathers' impact on children*.
5	What role does time-varying risk aversion play in evolution of asset prices?	Bansal and Yaron (2004)/ United States	Epstein-Zin's preferences and many time-varying risk models in finance (including ARCH models).	They model consumption and dividend growth rates as containing (i) a small long-run predictable component and (ii) fluctuating economic uncertainty (consumption volatility). These dynamics in conjunction with Epstein- Zin's preferences explain key asset markets phenomena. Financial markets dislike economic uncertainty and better long-run growth prospects raise equity prices. The model can justify the equity premium, and market return volatility, inter alia. As in the data, dividend yields predict returns and the volatility of returns is time-varying. In sum, uncertainties in financial markets amplify risk aversion, consistent with firms' dividend payout determinants (Paseda, 2020b).
6	What role do habit formation models play in explaining the evolution of asset prices?	Constantinides (1990)	Auto-regressive models	Reports the strong link between consumption at any time *t* with past consumption. The resulting consumption smoothing falls below the volatility of market portfolio return. In a way, consumption commitments underscore conservative financial policies by households
		Campbell and Cochrane (1999)	Auto-regressive models	Similar results as Constantinides (1990).
		Calvet and Sodini (2014)	Auto-regressive models	Similar results as Constantinides (1990)
		van Bilsen, *et al* (2020)	Auto-regressive models	Similar results as Constantinides (1990)
		Shirvani, *et al* (2021)	Auto-regressive models	Revisit the equity premium puzzle and show that the large equity premium that were reported in studies can be explained by choosing a more appropriate distribution for the return data. They describe a new distribution that better fits the return distribution and when used to describe historical returns can explain the large equity risk premium and thereby explains the puzzle.

Source: Author's compilation

5.0. Conclusion

In this paper, an attempt has been made to provide an overview of the field of household finance in terms of assets and liabilities composition, the attributes of households who participate in different assets' and liabilities' classes, risk preferences and beliefs and the theoretical framework for gauging risk preferences including the possibility of its time-varying phenomenon. Specifically, household assets and liabilities are driven by risk preferences, beliefs or expectations and other factors. Household assets consist of human capital and tangible assets. Tangible assets consist of real assets and financial assets. Risk preference is sensitive to wealth levels, consumption commitments, gender, intellectual ability, background risk, past experiences, age, and other personal attributes of households. Time-varying risk aversion has also been used to explain evolution of asset prices, including the equity premium and stock returns volatility. Habit formation models rationalize consumption smoothing thus indicating why the market volatility may outweigh aggregate consumption variability.

A central theme in household finance is the attempt to gauge the ability of individuals and households to follow optimal behaviour as predicted by normative models. The empirical work is mixed in terms of observation of household behaviour congruence with normative models. Sometimes, household behaviours tally with normative models and in some situations, they diverge. This heterogeneity is not only limited to diverse areas of choice; households display a wide range of behaviours even when confronted with the same decision problem. This evidence raises the debate of whether household suboptimal choices are the result of mistakes or systematic behavioural biases, and leads household finance to border on behavioural finance. The view that departures from normative optimal behaviour arise from mistakes is reinforced by the recent widespread finding that more sophisticated (especially more educated and richer) households seem to behave closer to the prescriptions of normative models. Another aspect borders on overconfidence where responses to basic finance questions contained in questionnaires uncover errors in decision making. An important task of household finance then becomes the identification of which mistakes are more harmful and which households tend to commit the largest mistakes. Recent findings suggest a substantial dispersion of welfare losses across households, and that the awareness of committing mistakes might in turn even affect household financial decisions, such as the degree of financial risk taking (Campbell, 2016).

Some of the important gaps not covered in this review deserve a brief mention. First, the study does not review the growing literature on behavioural considerations in the heterogeneity of the financial wealth elasticity of the risky share. Second, discussions on household portfolio models and household (borrowing or) financing decision are excluded. Third, cash management models and transactions means utilized by households are also excluded. This line of literature has important precursors in Baumol (1952), Tobin (1956) and Miller and Orr (1966). Fourth, insurance demand by households is skipped. Gomes, *et al* (2020) provides a rigorous and extensive survey. Fifth, household investor protection in the context of portfolio delegation and financial advice, given the incentives problems inherent in the market for financial advisory, is excluded (Akerlof and Shiller, 2015; Campbell, 2016).

In the last two decades, household finance has grown into an independent field with an agenda and a style separate from, though related to, assets pricing and corporate finance. It shares with assets pricing the importance given to portfolio choice and trading decisions, but differs in its focus on the median, rather than marginal, household, and on the decision process per se, regardless of its implications for financial asset valuation. It shares with corporate finance the

emphasis on the design of institutions in tempering agency problems, but concentrates on the conflict of interests and adverse selection issues encountered by households when they interface with financial markets.

The increasing availability of micro-data on household finances will enable the field to further expand tremendously. Household micro-data are still largely absent in developing countries especially in Africa. For instance, an IMF-sponsored study in Nigeria few years ago, merely considered household finance within the context of financial inclusion and risk sharing and in particular, how financial access reduces households' vulnerability to poverty measured by consumption decline (Carlson, *et al*, 2015). Some of the most fundamental issues are still open and under debate. Now we have a large body of evidence on how households decide to take financial risk and participate in financial markets. Moreover, the role played by wealth and human capital is still being debated among researchers.

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References

Akerlof, G. (1970), The market for "lemons": Quality uncertainty and the market mechanism, *Quarterly Journal of Economics*, **84**(3):488-500

Akerlof, G. and Shiller, R. (2015), *Phishing for phools: the economics of manipulation and deception*, NJ: Princeton University Press

Andersen, S., Campbell, J. Y., Nielsen, K. M., and Ramadorai, T. (2020), Sources of inaction in household finance: Evidence from the Danish mortgage market, *American Economic Review*, **110**(10): 3184-3230

Andreoni, J., Di Girolamo, A., List, J.A., Mackevicius, C., and Samek, A. (2020), Risk preferences of children and adolescents in relation to gender, cognitive skills, soft skills, and executive functions, *Journal of Economic Behaviour and Organization*, **179**:729-742

Atalay, K., Li., A. and Whelan, S. (2021), Housing wealth, fertility intentions and fertility, *Journal of Housing Economics*, **53**:101787

Austin, G. and Uche, C. U. (2007), Collusion and competition in colonial economies: Banking in British West Africa, 1916-1960, *Business History Review*, **81**(1):1-26

Aydilek, H., and Aydilek, A. (2020), Do we really need heterogeneous agent models? *Quarterly Review of Economics and Finance*, **78**:147-153

Badarinza, C., Balasubramaniam, V., and Ramadorai, T. (2019), The household finance landscape in emerging economies, *Annual Review of Financial Economics*, **11**:109-129

Badarinza, C., Campbell, J. Y., and Ramadorai, T. (2016), International comparative household finance, *Annual Review of Financial Economics*, **8**:111-144

Banerjee, A. V., Duflo, E., Glennerster, R., and Kinnan, C. (2015), The miracle of microfinance? Evidence from a randomized evaluation, *American Economic Journal: Applied Economics*, **7**:22-53

Bansal, R. and Yaron, A. (2004), Risks for the long run: A potential resolution of asset pricing

puzzles, *Journal of Finance*, **59**(4):1481-1509
Baumol, W. (1952), The transactions demand for cash: An inventory theoretic approach, *Quarterly Journal of Economics*, **66**(4): 545-556
Black, S. E., Devereux, P. J., Lundborg, P. and Majlesi, K. (2020), Poor little rich kids? The role of nature versus nurture in wealth and other economic outcomes and behaviours, *Review of Economic Studies*, **87**(4): 1683-1725
Blasio, G., Paola, M. D., Poy, S. and Scoppa, V. (2021), Massive earthquakes, risk aversion and entrepreneurship, *Small Business Economics*, **57**:295-322
Bodie, Z., Merton, R. C., and Samuelson, W. F. (1992), Labour supply flexibility and portfolio choice in a life-cycle model, *Journal of Economic Dynamics and Control*, **16**(3–4): 427–449
Bogan, V. L. (2015), Household asset allocation, offspring education and the sandwich generation, *American Economic Review*, **105**:611-615
Brunette, M. and Jacob, J. (2019), Risk aversion, prudence and temperance: An experiment in gain and loss, *Research in Economics*, **73**(2): 174-189
Brunnermeir, M., and Nagel, S. (2008), Do wealth fluctuations generate time-varying risk aversion? Micro-evidence on individuals' asset allocation, *American Economic Review*, **98**(3), 713–736
Bursztyn, L., Fiorin, S., Gottlieb, D., and Kanz, M. (2019), Moral incentives in debt repayment: Evidence from a field experiment, *Journal of Political Economy*, **127**:1641-1683
Calvet, L. E., Campbell, J. Y., and Sodini, P. (2007), Down or out: Welfare costs of household investment mistakes, *Journal of Political Economy*, **115**(5): 707-747
Calvet, L. E. and Sodini, P. (2014), Twin picks: Disentangling the determinants of risk-taking in household portfolios, *Journal of Finance*, **69**(2):867-906
Campbell, J. Y. (2006), Household finance, *Journal of Finance*, **61**(4):1553-1604
Campbell, J. Y. (2016), Restoring rational choice: the challenge of consumer financial regulation, *American Economic Review*, **106**:1-30
Campbell, J. Y. and Cochrane, J. (1999), By force of habit: A consumption-based explanation of aggregate stock market behaviour, *Journal of Political Economy*, **107**(2): 205-251
Campbell, J. Y., Ramadorai, T., and Ranish, B. (2019), Do the rich get richer in the stock market? Evidence from India, *American Economic Review: Insights*, 1(2):225-240
Carlson, S., Dabra-Norris, E., Saito, M., and Shi, Y. (2015), Household financial access and risk sharing in Nigeria, *IMF Working Paper*, WP/15/169.
Chiapporì, P.-A., and Paiella, M. (2011), Relative risk aversion is constant: evidence from panel data, *Journal of the European Economic Association*, **9**(6): 1021-1052
Cocco, J. (2005), Portfolio choice in the presence of housing, *The Review of Financial Studies*, **18**(2): 535–567.
Constantinides, G. M. (1990), Habit formation: A resolution of the equity premium puzzle, *Journal of Political Economy*, **98**(3): 519-543
Das, S., Kuhnen, C.M. and Nagel, S. (2020), Socioeconomic status and macroeconomic expectations, *Review of Financial Studies*, **33**(1):395-432
Dohmen, T., Huffman, D., Schupp, J., Falk, A., Sunde, U., and Wagner, G. (2011), Individual risk attitudes: measurement, determinants, and behavioural consequences, *Journal of the European Economic Association*, **9**(3): 522-550
Fagereng, A., Gottlieb, C., and Guiso, L. (2017), Asset market participation and portfolio

choice over the life-cycle, *Journal of Finance*, **72**(2):705-750
Fagereng, A., Guiso, L., Malacrino, D. and Pistaferri, L. (2020), Heterogeneity and persistence in returns to wealth, *Econometrica*, **88**(1):115-170
Fama, E. F. (1984), Forward and spot exchange rates, *Journal of Monetary Economics*, **14**(3): 319-338
Foltyn, R. (2020), *Essays in macroeconomics and household finance*, PhD Dissertation, Stockholm University.
Friend, I. and Blume, M. (1975), The demand for risky assets, *American Economic Review*, **65**(5):900-922
Gennaioli, N., Shleifer, A. and Vishny, R. (2015), Money doctors, *Journal of Finance*, **70**(1): 91-114.
Giannetti, M. and Wang, T. Y. (2016), Corporate scandals and household stock market participation, *Journal of Finance*, **71**:2591-2636.
Gine, X., and Kanz, M. (2018), The economic effects of a borrower bailout: evidence from an emerging market, *Review of Financial Studies*, **31**:1752-1783
Gomes, F. J., Haliassos, M., Ramadorai, T. (2020), Household finance, Institute for Monetary and Financial Stability (IMFS) Working Paper Series, No 138, Goethe University, Frankfurt
Grossman, S. and Laroque, G. (1990), Asset pricing and optimal portfolio choice in the presence of illiquid durable consumption goods, *Econometrica*, **58**(1): 25-51
Guiso, L. and Sodini, P. (2013), Household finance: An emerging field, in G. M. Constantinides, M. Harris, and R. M. Stulz (Eds.), *Handbook of the Economics of Finance*, Chapter 21, **2B**: 1397-1532; Amsterdam: Elsevier.
Harrison, G. W., Lau, M. I., and Yoo, H. (2020), Risk attitudes, sample selection, and attrition in a longitudinal field experiment, *Review of Economics and Statistics*, **102**(3):552-568
Harmenberg, K. and Oberg, E. (2021), Consumption dynamics under time-varying unemployment risk, *Journal of Monetary Economics*, **118**: 350-365
Heaton, J, and Lucas, D., (2000), Portfolio choice and asset prices: the importance of entrepreneurial risk, *Journal of Finance* **55**:1163– 1198.
Heimer, R. Z., Myrseth, K. O., and Schoenle, R. S. (2019), Mortality beliefs and household finance puzzles, *Journal of Finance*, **74**(6):2957-2996
Holt, C. A., and Laury, S. K. (2002), Risk aversion and incentive effects, *American Economic Review*, **92**(5): 1644-1655
Kahneman, D. and Tversky, A. (1979), Prospect theory: an analysis of decision under risk, *Econometrica*, **47**(2): 263-292
Kesavayuth, D., Ko, K. M. and Zikos, V. (2018), Locus of control and financial risk attitudes, *Economic Modelling*, **72**:122-131
Koomson, I., Villano, R. A., and Hadley, D. (2022), The role of financial literacy in households' asset accumulation process: Evidence from Ghana, Forthcoming *Review of Economics of the Household*, **20**, https://doi.org/10.1007/s11150-022-09603-z
Kuratko, D. F., Fisher, G., and Audretsch, D. B. (2020), Unravelling the entrepreneurial mindset, *Small Business Economics*, https://doi.org/10.1007/s11187-020-00372-6
Levine, R., Lin, C., and Xie, W. (2020), The African slave trade and modern household finance, *Economic Journal*, **130**(630): 1817-1841.
Li, W., Song, C., Xu, S., and Yi, J. (2022) High sex ratios and household portfolio choice in China, *Journal of Human Resources*, **57**(2): 465-490

Mehra, R., and Prescott, E. C. (1985), The equity premium: a puzzle, *Journal of Monetary Economics*, **15**(2): 145-161
Merton, R. C. (1969), Lifetime portfolio selection under uncertainty: the continuous-time case, *Review of Economics and Statistics*, **51**(3):247-257
Merton, R. C. (1971), Optimum consumption and portfolio rules in a continuous-time model, *Journal of Economic Theory* **3**:373– 413.
Merton, R. C. (1973), An intertemporal capital asset pricing model, *Econometrica* **41**:867-887
Miller, M. H. and Orr, D. (1966), A model of the demand for money by firms, *Quarterly Journal of Economics*, **80**(3): 413-435
Morse, A. (2015), Peer-to-peer crowdfunding: information and the potential for disruption in consumer lending, *Annual Review of Financial Economics*, **7**:463-482
Moya, A. (2018), Violence, psychological trauma, and risk attitudes: Evidence from victims of violence in Colombia, *Journal of Development Economics*, **131**:15-27
Mumtaz, M. Z. and Smith, Z. A. (2021), The behaviour of household finance on demographic characteristics in Pakistan, *Economic Research-Ekonomska Istrazivanja*, **34**(1):1409-1427, doi:10.1080/1331677X.2020.1825107
Munoz-Murillo, M., Alvarez,-Franco, P. B., and Restrepo-Tobon, D. A. (2020), The role of cognitive abilities on financial literacy: New experimental evidence, *Journal of Behavioural and Experimental Economics*, **84**: 101482
Olafsson A, and Pagel, M. (2018), The liquid hand-to-mouth: evidence from personal finance management software, *Review of Financial Studies*, **31**:4398-4446
Oluyombo, O. O. (2013), Household assets and rural finance in Nigeria, *Applied Economics Journal*, **20**(2): 55-74
Ozili, P. K. (2021), Financial Inclusion in Nigeria: An Overview, *International Journal of Banking and Finance*, Forthcoming, Available at SSRN: https://ssrn.com/abstract=3826795
Paola, M. D. (2013), The determinants of risk aversion: The role of intergenerational transmission, *German Economic Review*, **14**(2): 214-234
Paseda, O. (2006), *The Investment Performance of Common Stocks in Nigeria: Tests of Finance Theories*, Germany: GRIN Publishers.
Paseda, O. (2016), *Finance-theoretic analysis of a Banking firm: Case Study of First Bank of Nigeria Plc*, LAP Lambert Publishing.
Paseda, O. (2020a), Optimal taxation of capital and wealth redistribution in Nigeria: A survey of literature, *Finance and Banking Review*, **14**(2): 97-118
Paseda, O. (2020b), The determinants of dividend payout ratios of Nigerian non-financial firms, *Nigerian Journal of Management Studies*, **20**(1): 123-135
Postlewaite, A., Samuelson, L., and Silverman, D. (2008), Consumption commitments and employment contracts, *Review of Economic Studies*, **75**(2): 559-578
Regier, M. and Rouen, E. (2020), The stock market valuation of human capital creation, Working Paper, Harvard Business School
Sakha, S. (2019), Determinants of risk aversion over time: Experimental evidence from rural Thailand, *Journal of Behavioural and Experimental Economics*, **80**:184-198
Sane, R. (2019), Stock market trading in the aftermath of an accounting scandal, *Emerging Market Review*, **40**:100627
Scharfstein, D. S. (2018), Presidential Address: Pension policy and the financial system, *Journal of Finance*, **73**:1463-1512

Shirvani, A., Stoyanov, S.V., Fabozzi, F. J., and Rachev, S. T. (2021), Equity premium puzzle or faulty economic modelling? *Review of Quantitative Finance and Accounting*, **56**: 1329-1342

Stango, V. and Zinman, J. (2009), Exponential growth bias and household finance, *Journal of Finance*, **64**(6): 2807-2849.

Tang, H. (2019), Peer-to-peer lenders versus banks: substitutes or complements? *Review of Financial Studies*, **32**:1900-1938

Tobin, J. (1956), The interest elasticity of the transactions demand for cash, *Review of Economics and Statistics*, **38**(3):241-247

Uche, C. U. (1996), Credit discrimination controversy in British West Africa: Evidence from Barclays (DCO), *African Review of Money, Finance and Banking*, **1/2**: 87-106

Uche, C. U. (1998), Accounting and control in Barclays Bank (DCO): the lending to Africans episode, *Accounting History Review*, **8**(3):239-260

Uche, C. U. (2003), Foreign banks, Africans, and credit in colonial Nigeria, c.1890-1912, *Economic History Review*, **52**(4): 669-691

van Bilsen, S., Bovenberg, A. L., and Laeven, R.J.A. (2020), Consumption and portfolio choice under internal multiplicative habit formation, *Journal of Financial and Quantitative Analysis*, **55**(7): 2334-2371

Viceira, L. M. (2001), Optimal portfolio choice for long-horizon investors with non-tradable labour income, *Journal of Finance* **56**:433– 470.

Xiao, J. J. and Tao, C. (2021), Consumer finance/household finance: the definition and scope, *China Finance Review International*, **11**(1): 1-25