

Consumers and Financial Markets

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Abstract. Household finance studies how households use financial markets to reach their goals. Until recently household finance has been hampered by the lack of comprehensive and detailed data on the finances and financial behavior of household. Many countries have begun collecting information to overcome this issue, effectively allowing researchers to collect the evidence needed to promote valuable financial consumer protection. In the first part of the chapter we review the basic principles of optimal financial choice and the evidence we have on household portfolio and financing decisions. In the second, we investigate issues of financial consumer protection and the policy measures typically evoked to solve them. We pose, and at least partially try to answer, several questions. Do households follow the basic precepts of financial theory or do they make mistakes? Which are the most common financial mistakes? Which are more costly? Which type of interventions could be used to prevent consumers from choosing wrongly? Does financial literacy help? Who should receive it? How is it possible to direct financial decisions without restricting consumer choices?

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1. Introduction

Households rely on financial instruments in many instances and use financial markets, directly or indirectly, at various frequencies. They pay for goods and services with a variety of means including cash, checks and credit cards. They transfer resources inter-temporally to invest in durable goods and human capital, or to finance present and future consumption. They face, and need to manage, various risks related to their health and possessions. All these activities involve payment choices, debt financing, saving vehicles and insurance contracts that require knowledge and information to be used. Households can personally collect the necessary information or can rely on third party advices. Alternatively, they can delegate to external experts the task of managing their finances.

How should households take all these decisions? How do they actually choose?

A long tradition of economic theory develops models that offer prescriptions on how agents should optimally choose consumption, investment and borrowing plans. While in many instances it may be reasonable to expect that household actual behavior does not deviate from what normative models prescribe, this is not necessarily true when it comes to financial decisions, which are often extremely complex. Deviations from recommendations could simply be mistakes and, as such, be potentially rectified with financial education, professional advice or appropriate regulation of consumer financial markets and products. Alternatively, they could be the result of behavioral biases and thus challenge the benchmarking role of normative models themselves and perhaps call for more consumer protective measure.

Over the past decade the financial environment that household face, partly as a byproduct of rapid financial innovation, has become much more complex than it used to be. Today consumers face a large number of financial alternatives. These products can be rather complex, their contractual details hard to grasp and their pricing difficult to evaluate. In addition, the interaction with financial market representatives is much more intricate than in the past and the institutional environment does not necessarily discourage potential abuses. All these problems are compounded by the fact that many households appear to have only a limited ability to deal with financial markets and possess a poor understanding of financial instruments. “Financial sophistication” - the understanding of financial instruments and the competence in taking sound financial decisions - is not only limited for many, but it is also very unevenly distributed across households.

In this chapter we review the evolution and most recent advances of household finance¹, the field of financial economics that studies how households use financial instruments and markets to achieve their objectives. We focus on two domains of choices: the allocation of savings and the liability structure of households. We also review the debate on consumer protection in financial markets. Though financial products and services used by households might need to be regulated for reasons already identified in other markets, such as various types of externalities and information failures, some of the issues that call for regulation – most importantly the lack of financial sophistication – are specific to household finances and may require new and tailored regulatory frameworks.

In the chapter we try to focus on evidence from Sweden and the Nordic countries. Scandinavian countries are blessed with the best worldwide data on household financial decisions and allow for studying many aspects of individual financial choices as well as the need and validity of regulations. Finland possesses high frequency and detailed data on stock trading by resident individuals. Denmark, Norway and Sweden have a long tradition of collecting detailed and comprehensive data due to the existence of a wealth tax. Unfortunately, the Swedish data stops in 2007 (and so the results that we can present in this study) when the tax was abolished. A situation not shared by Denmark where the data has is still collected and even improved even after the abolition of the wealth tax.

The rest of the chapter is organized as follows. Section 2 discusses household portfolio allocation and several features related to how well households do in their investments including diversification, asset selection, delegation, etc. Section 3 looks at the liability side of the household balance sheet and review household decisions on mortgages and credit card debt, which represent the bulk of household liabilities in most countries. Section 4 discusses consumer financial protection and provides several rationales for government intervention and regulation. Section 5 reviews three types of policies meant to improve consumer financial choices: policies aimed at increasing financial competence, policies aimed at building financial markets that consumers can safely trust, and policies meant to protect consumers from mistakes by offering default alternatives. Section 6 concludes.

¹ The term household finance was coined by John Campbell in his 2006 Presidential Address to the American Financial Association.

2. Household portfolio decisions

Financial theory suggests a number of principles that households should follow when they borrow and invest in financial markets. Do households follow these basic precepts? If they do not, which deviations from optimal choice are more costly? Which type of regulations should policy makers adopt to reduce the cost of investment and borrowing mistakes? In this chapter we review the basic precepts of financial theory together with the evidence about household mistakes in financial markets. We then turn to the consequences that these findings have for consumer protection in financial markets.

2.1. Participation

Financial market participation allows investors to earn a risk premium on the proportion of the wealth invested in financial securities such as stocks and mutual funds. Households should weight the benefit of investing in risky securities (the risk premium) against the fixed costs of participation they face (Vissing-Jørgensen, 2003). Participation costs are varied and include monetary expenses (e.g. administrative charges to set up an investment account) as well as cognitive and information costs (e.g. learning about financial products). All households should then participate to the extent that the risk premium they earn on the amount invested outweighs the fixed costs of participation. Hence, fixed participation costs imply that more risk tolerant, wealthier and more educated investors are more likely to participate because they have reduced participation costs and are more likely to invest more wealth in risky assets.

Table 1 reports stock market participation rates across countries by quartiles of financial wealth. A pervasive feature of the data is limited participation and that participation is increasing with wealth. Strikingly, even at very high levels of wealth, some households do not invest in equity. Finally, there are marked differences in average participations across countries. For example, very few hold stocks in Italy and even fewer in Spain, while, in the US or in Sweden, the median household is a stockholder. These differences are not merely a reflection of differences in GDP per capita. Italy, for instance, has a much lower stock market participation rate than the UK, but both countries have similar levels of per capita income.

TABLE 1 HERE

A number of researchers have estimated the participation costs necessary to rationalize the number of households that do not invest in equity markets (Attanasio and Paiella, 2011; Luttmer, 1999; Paiella, 2007; Vissing-Jørgensen, 2003). The estimates found in the literature are small and, as such, reasonable. In addition, pessimistic beliefs (Dimson, Marsh and

Staunton, 2002; Hurd, van Rooij and Winter, 2009; Kezdi and Willis, 2009), ambiguity aversion (Dow and Werlang, 1992; Garlappi, Uppal and Wang, 2007), and lack of trust (Guiso, Sapienza and Zingales, 2008) contribute to explain non-participation, especially across countries.

The literature on the participation puzzle is the oldest in household finance and is large. Estimates of costs necessary to rationalize average household participation choices are reasonable, suggesting that on average households do not suffer large welfare costs for not investing in risky asset markets. However welfare losses from non-participation are probably not equally shared in the population and more investigation is needed to document which households are bearing the largest costs. For example, Calvet, Campbell and Sodini (2007a) find that participation costs are at least a third less than previously thought because non-participants are typically non-sophisticated households that are more likely to make mistakes and thus earn a lower risk premium when participating.

2.2. Portfolio Selection: diversification, performance, delegation

Once households decide to participate in risky asset markets, they are faced with a number of decisions: how much to invest in risky assets, which assets to buy, whether to invest through a fund manager, whether to follow the recommendations of a financial advisor. In this section we do not review the large literature on the determinants of risk taking in household portfolios (see for example Guiso and Sodini, 2012) and we focus instead on the composition of the share of financial wealth invested in risky asset: the portfolio risky share. Do households hold diversified portfolios? Which assets do they decide to buy? How do they trade? Do they invest through a fund manager or directly? Do they rely on financial advisors and follow their recommendations?

Diversification and Performance. One of the basic precepts of financial theory is to hold a diversified portfolio, i.e. to avoid concentrating risk in one or few (possibly correlated) assets (Markowitz, 1952). An under-diversified portfolio carries uncompensated risk, meaning that there is a better diversified portfolio that could earn a higher return for the same level of risk. The best way to form a diversified portfolio is to buy the market portfolio, i.e. all the assets available in the market according to their market capitalization. What is the level of diversification achieved by households in their financial investments? How large are the losses from under-diversification?

Data limitations have hampered research on the level of diversification in household financial portfolios. Researchers need data with information on how household invest financial wealth in individual risky assets. Early datasets provided such detailed information only on the part of wealth invested directly in stocks (Blume and Friend, 1975 and 1978; Kelly, 1995) and highly underestimated the level of diversification achieved by households. Figure 1 plots the *stock* investments of 10,000 randomly selected Swedish households in the Markowitz risk-return diagram.

FIGURE 1 HERE

Dots higher in the diagram represents better diversified stock portfolio since they achieve a higher level of expected return for the same level of risk. As found the early literature on US data, the figure highlights that a sizable number of households hold stock portfolios that are under-diversified.

However figure 1 does not consider the complete portfolios of households. Not only it does not consider which fraction of household financial investment is held in risky assets, it also disregards investment in mutual funds. Figure 2 reports the risk and return characteristics of the *complete* portfolios held by 10,000 randomly selected Swedish households.

FIGURE 2 HERE

Once the complete portfolio is considered, the level of diversification reached by Swedish households can be correctly assessed. Household complete portfolios are much better diversified than portfolios of directly held stock. The median Swedish households loses less than 30bp per year in its complete portfolio compared to holding risk free assets and and the world index in Swedish currency, and even gains 11bp per year compared to the Swedish index.

Calvet, Campbell and Sodini (2007a) show that households reach a higher level of diversification in their complete portfolios in two ways. First, they invest in mutual funds, rather than directly in stocks, to achieve higher diversification. Second, they invest only a small fraction of their financial wealth in the part of their portfolios that is under-diversified. Figure 3 illustrates this result by reporting how the level of under-diversification (as measured by the risky portfolio idiosyncratic risk) varies with the fraction of financial wealth invested in risky assets.

FIGURE 3 HERE

Households with little investment in risky assets hold poorly diversified portfolios. However when a sizable fraction of wealth is invested in risky asset, households start diversifying their investments and hold much better diversified risky holdings.

For a minority of households losses from under-diversification are however substantial: five percent of households lose over five percent in average portfolio return or more than three percent of their disposable income per year. Diversification losses seem to decrease with sophistication. Calvet, Campbell and Sodini (2007a) finds that poorer, less educated households tend to invest inefficiently in under-diversified portfolios. Sophistication is also correlated with risk taking. Poorer and uneducated households take less risk and reduce the losses caused by under-diversification. These findings suggest that households might be aware of their limited capabilities when they decide how much risk to take.

The fact that sophisticated investors tend to hold better diversified portfolios suggests that under-diversification can be at least partially the result of mistakes (Calvet, Campbell and Sodini, 2009b). Alternatively under-diversification can be induced by systematic behavioural biases or can be the result of optimal choice. Theories of under-diversification can be divided into three broad categories: information, preferences and hedging.

Information based theories argue that investors might hold portfolios that differ from the market when they do not have the same information or when some assets are more difficult to evaluate than others. Almost by definition, investors unaware of the existence of some securities cannot invest in fully diversified portfolios (Brennan, 1975; Merton, 1987). In addition, investors with better information on some assets should take larger positions in those assets than standard theory dictates (Van Nieuwerburgh and Veldkamp, 2009 and 2010).

Preference based theories are based on the idea that investors might simply have a taste for certain financial asset characteristics that induce them to hold under-diversified portfolios. Huberman (2001) argues that investors prefer familiar assets simply because of preference inclinations and not because of informational advantage. Mitton and Vorkink (2007), Barberis and Huang (2008) and Polkovnichenko (2005) consider investors that have a taste for positively skewed payoffs for example because they have prospect theory preferences (Kahneman and Tversky, 1979).

Hedging theories build on the normative recommendation that households should tilt their portfolios away from the market in order to reduce their exposure to those assets that are correlated with their own endowment risk (Duffie et al., 1997; Davis and Willen, 2000; Calvet, Gonzales-Eiras and Sodini, 2004; Cochrane, 2008). There is a clear tension between hedging needs and the prediction of models with differential information and familiarity. For example, on the one hand investors should shy away from stocks of sectors close to their professional expertise since they are likely to be correlated with their human capital. On the

other, investors might decide to hold professionally close stocks since they are more likely to have superior information about them or feel them as familiar.

Empirical research on the determinants of diversification is still at its early stages since it is extremely challenging to understand why households do not hold diversified portfolios. The researcher needs not only household portfolio data at security level but also detailed data on individual characteristics, including information on preferences and beliefs. In the remainder of this section we summarize the empirical evidence the field of household finance has been able to produce so far.

It is widely established that investors tend to hold stocks that appear prominently in the news, that are geographically close, or that are connected to the products and services they use (Barber and Odean, 2008; Grinblatt and Keloharju, 2001a; Keloharju, Knupfer and Linnainmaa, 2012). It is however not clear whether these tendencies are the result of preference inclinations or superior information. One way to distinguish between the preference and the information explanations is to study whether households are able to earn abnormal returns from buying geographically and professionally close stocks. Some researchers find that individual investors are able to achieve positive performance (Ivković and Weisbenner, 2005; Ivković, Sialm and Weisbenner, 2008; Massa and Simonov, 2006) and, more recently, others find the opposite result on different datasets or with different empirical methodologies (Døskeland and Hvide, 2011; Seasholes and Zhu, 2010). Consistently, Barber and Odean (2000) and Grinblatt and Keloharju (2000) find that investors tend to suffer trading losses even before fees and particularly in the long run when they trade in their brokerage accounts. However, households seem to behave very heterogeneously. Recent findings suggest that at least a minority of investors seem to tilt their portfolio away from the market because they possess superior information. Barber et al. (2011) find that the top 500 Taiwanese day traders are able to reliably earn positive abnormal returns net of trading costs over time. Grinblatt, Keloharju and Linnainmaa (2012) find that investors with higher IQ are more likely to achieve positive performance: they sell at high prices, have superior market timing, stock picking skills, and trade execution.

Investors tend to hold geographically and professionally close stocks, so that the idiosyncratic risk they take, with or without informational advantage, is likely to be highly correlated with their income and endowment risk. An important question is then whether households understand the trade-off between familiarity and hedging? Døskeland and Hvide (2011) find on Norwegian data that professionally close investments not only underperform but are also poor hedges.

All the evidence reported above focuses on direct stock holdings and excludes the other forms of household financial wealth such as riskless securities and mutual funds. Only a few papers break this tradition. Hung et al. (2009) find that, in a cross section of Taiwanese employees, a one standard deviation increase in the riskiness of the employer stock reduces the fraction of financial wealth invested in stocks by 14%. Even though it is difficult to interpret cross sectional correlations, their result suggests that investors understand at least partially that they should not concentrate a large fraction of their wealth in financial assets highly correlated with their income risk. Calvet, Campbell and Sodini (2007a) argue that investors with high idiosyncratic risk in their directly held stock portfolio, tend to reduce their under-diversification losses by investing most of their financial wealth in mutual funds and/or by limiting their risk exposure altogether. This interpretation receives further support by Anderson (2011) who merges high frequency trading data from a Swedish brokerage house with the Swedish Wealth Registry. He is able to observe the fraction of total risky financial wealth, or “stake”, the investors have in stocks at the brokerage house. Even among the skewed sample of brokerage house clients, many have a small stake: 20% of the sample has a stake of less than 5%, the median investor of less than 35% and only 30% of the investors have a stake of more than 75%. In other words, it seems that most households choose to expose only a small fraction of the wealth invested in risky assets to high frequency trading. Biliias, Georgarakos, and Haliassos (2010) find that less than 20% of US households have brokerage accounts, and the median brokerage account as a share of household financial wealth is of the order of 10% or less. Anderson (2011) finds that investors who have a high stake in directly held stocks bear a substantial part of the trading losses, and they are also among those who least can afford them. Wealthier, more educated investors trade less and have higher trading returns when they do trade. Maybe even more importantly, they have a smaller fraction of their risky assets in directly held stocks in these accounts.

Delegation. Rather than deciding on their finances directly, households may delegate portfolio decisions to professional money market managers and, when deciding on their own, rely on the suggestions of financial advisors. Hung et al. (2008) report that 73% of US investors rely on professional advice to conduct stock market or mutual fund transactions. Adverse selection among mutual fund managers (Berk and Green, 2004), conflict of interest with financial advisors (Inderst, 2010, Inderst and Ottaviani, 2009, 2011a and 2011b) and lack of financial literacy among households (Lusardi, Mitchell and Curto, 2009 and 2010) might generate suboptimal equilibria that may require regulatory intervention (Campbell et al., 2011).

A large and long standing literature studies the performance of mutual fund managers. After fees, actively managed mutual funds do not achieve a higher performance than passive indexes on average, and their risk-adjusted returns display little persistence over time (Jensen, 1968; Carhart, 1997; Wermers, 2000; Fama and French, 2010). A direct implication of these facts is that investors should choose funds with low fees and prefer passive or index funds to actively managed funds. Choi, Laibson and Madrian (CLM, 2010) conduct an experiment that builds on the finding that the cross-sectional variation in fees charged by S&P 500 index funds is surprisingly similar to the variation found in actively managed funds (Hortaçsu and Syverson, 2004). Subjects are asked to invest 10,000 USD hypothetically between four real S&P 500 funds with their experimental earnings depending on how well their chosen portfolio performs subsequently. They find that only a minority of investors minimize fees and instead that most investors seems to pay attention predominantly to past returns. They attribute the suboptimal behaviour to mistakes since more literate investors are more likely to choose lower fees, and those who do not minimize fees are more likely to feel afterwards that they have not taken the best decision. In line with CLM (2009), Grinblatt et al. (2011) find that Finnish investors with higher IQ seem to minimize fees when choosing across mutual funds.

An alternative to delegation to mutual fund managers is to use the recommendations of financial advisors. Hackethal, Haliassos and Jappelli (HHJ, 2011) and Kramer (2012) find that advised accounts do not earn higher raw and abnormal returns than non-advised accounts after fees and after controlling for investor characteristics. Even though advisors do not seem to improve client portfolio performance, they may still help investors to avoid common investment mistakes and mitigate behavioral biases. Shapira and Venezia (2001) and HHJ (2012) find that advised accounts have better diversified portfolios and are less prone to the disposition effect. Mullainathan, Nöth, and Schoar (MNS, 2009) find the opposite result by tracking the recommendations that trained auditors, acting as customers, receive from financial advisors. The auditors are assigned different portfolios characterized by various biases and are sent to seek advice from advisors with contrasting or aligned incentives. Even though it is not clear whether in a long-term client relationship the audited advisors would keep the same suggestions, MNS (2009) find that existing biases are, if anything, augmented by professional advices. Bluethgen, Hackethal and Meyer (2008) indeed find large heterogeneity in the quality of financial advisors not only due to skill but also to the form of compensation. Advisors that receive fixed fees rather than sale commissions tend to offer better recommendations. Consistently, HHJ (2012) find that account performance is higher when managed by independent, rather than bank, financial advisors. These results suggest that

regulations on financial advisor compensation structure could have a relevant effect on household investment outcomes.

Another strand of the literature seeks to characterize which type of households use financial advisors and to which extent they follow the recommendations. A robust finding is that more sophisticated (wealthier, better educated, more financially literate, less overconfident) and more trusting investors are more likely to delegate portfolio management or seek financial advice (Guiso and Jappelli, 2006; Bucher-Koenen and Koenen, 2010; HHJ, 2012; Georgarakos and Inderst, 2011). Bhattacharya et al. (2012) perform a randomized experiment whereby unbiased financial advice is offered to a sample of randomly selected customers of a large European brokerage house. Despite the advice is unbiased by construction and is given for free, the offer is accepted only by 5% of the 8,000 contacted clients. In line with the previous literature, financial sophistication increases the probability of accepting the advice but, surprisingly, makes it also less likely that the advice is followed. Taken literally these results suggest that improving financial advice quality might not have a large impact on investor welfare: those who accept the advice are those who need it the least and who are less likely to follow the advice ex post.

2.3. Portfolio rebalancing

In the previous sections we have taken a static approach to portfolio choice. In this section we move to a dynamic approach and ask how household should and do rebalance their portfolios over time. We first investigate how households change their financial risk exposure in response to market movements, then, we study rebalancing over the life-cycle.

Portfolio rebalancing in response to market movements. Households choose their financial risk exposure by allocating a fraction of financial wealth to risky securities such as stocks or corporate bonds. After a choice is made, movements in asset prices mechanically induce passive variations of the financial wealth risky share away from the initial level. Investors with unchanged beliefs and risk attitudes should then rebalance the risky share in order to maintain the desired risk exposure and offset the variations induced by movements in asset prices. Indeed, practitioners and financial advisors typically offer the recommendation of rebalancing the portfolio so that the share invested in risky assets is stable over time.

Do households follow the industry recommendation and rebalance their portfolios actively or do they let their portfolio allocations vary passively with market prices? Which households

rebalance more actively? Do they rebalance stock and mutual fund holdings in the same way, or do they trade in the two types of securities differently?

Calvet, Campbell and Sodini (CCS, 2009a) investigate these issues using data on Swedish households from 1999 to 2002. By using information on portfolio holdings at individual asset level at the end of each year, they decompose the observed yearly changes of the risky share into the ones passively generated by market movements and the ones that are actively chosen by investors. They find that households offset about half of the passive variations in their risky share and thus follow a strong contrarian strategy in the overall level of risk they take. Their result is consistent with previous findings that households seem to buy individual stocks in falling markets and sell them in rising markets (e.g. Choe, Kho and Stulz, 1999; Richards, 2005; Goetzmann and Massa, 2002; and Griffin, Harris and Topaloglu, 2003; Grinblatt and Keloharju, 2000 and 2001b). Interestingly, even though households follow a contrarian strategy in their overall risky share and in their individual stock holdings, they seem to be momentum traders in mutual funds. CCS (2009a) show that households tend to sell mutual funds that have lost value and instead tend to buy funds that have increased in value. This finding is consistent with the literature on how mutual fund flows depend on past performance. A widely established fact is a positive and convex relation between mutual fund past raw and risk adjusted returns and net inflows (Ippolito, 1992; Gruber, 1996; Chevalier and Ellison, 1997; Sirri and Tufano, 1998; Dahlquist, Engstrom and Soderlind, 2000; Del Guercio and Tkac, 2002).

A challenging issue is to evaluate whether households rebalance their portfolios optimally. Indeed they might change their risk attitudes and revise their beliefs over time so that past chosen levels of the risky share do not represent anymore their optimal choice. CCS (2009a) build an adjustment model of portfolio rebalancing that they structurally estimate on Swedish data. They find that richer, more educated households with better diversified portfolios rebalance more actively and display less inertia. Figure 4, taken from table A11 of the online appendix to CCS (2009a), illustrates the relationship between sophistication and rebalancing. The figure classifies households into adjustment speed bins, and reports the fraction of households with high-school and post high-school education in each bin. The relation between education and rebalancing is strong. The fraction of households with post high-school education is only 6% in the 5th percentile of the speed of adjustment distribution and climbs to 71% in the 95th percentile.

FIGURE 4 HERE

Inertia in household portfolio has been debated largely in the literature with two emerging stylized facts. First, inertia is more prevalent among unsophisticated investors as illustrated above. Second, households display different levels of inertia on different types of financial investments. Individual investors tend to be quite dynamic in their stock holdings particularly when they trade in brokerage accounts (Barber and Odean, 2000). They seem to rebalance their portfolios quite actively in their current savings (CCS 2009a) but they display considerable inertia in their retirement savings (Carroll et al., 2009; Dahlquist, Martinez and Söderlind, 2011; Sialm, Starks and Zhang, 2012).

Portfolio rebalancing over the lifecycle. Investors are often advised by practitioners to invest substantially in stocks when young and reduce the exposure to the stock market when older – a recommendation that translates into the popular rule of thumb of investing a share of financial wealth in stocks equal to 100 minus the investor’s age (e.g. 75% in stocks when 25 years old and 25% when 75). Such widespread financial advice can be easily rationalized with normative models of optimal portfolio choice that explicitly consider the effect of human capital on financial risk taking (Merton, 1971).

Human capital represents the stock of individual attributes - such as skills, personality, education and health - embodied in the ability to earn labor income. It can be defined as the present discounted value of the flow of disposable labor income that an individual expects to earn over the remaining lifetime. In figure 5 we report the estimated human capital of Swedish households by education level following the methodology of Calvet and Sodini (2011).

FIGURE 5 HERE

Human capital is significantly higher for individuals with higher education. It increases at young ages as individuals accumulate education and working experience and peaks at about the age of 40 when the lower number of working years left outweighs the growth in income. For some categories of investors labour income can be highly correlated with stock returns – e.g. top managers whose compensation is tied to the value of the company, or employees who hold a large fraction of financial wealth in the employer’s stock. However, for many household, income shocks arise mostly from health issues, local job market conditions, entrepreneurial risk and family composition dynamics. Innovations in earnings are thus idiosyncratic in nature and not related to financial market conditions (Heathcote, Storesletten and Violantec, 2008; Davis and Willen, 2000). These empirical findings imply that human capital can then be largely viewed as a bond that each individual is endowed with. In addition,

the fact that human capital evolves over the lifetime in a hump shaped way, generates the normative recommendation that the risky share should be higher for younger households and decrease afterwards. The intuition is simple. Since human capital has the same role of a large endowment in riskless bonds, it creates a strong incentive to invest in risky securities early in life, when individuals have a lot of it, and to dispose of risky assets close to retirement.

Do households follow the practitioner and the model recommendation or do they keep their risky share constant over time investing too little when they are young and too much when they are old? Unfortunately, it is very challenging to verify how households invest as they age. Even if one would be able to obtain data that follows a large sample of individuals from when they start working until they retire, it is not clear that their investment behavior observed over time can be attributed to the passing of age. The portfolio pattern could be due to the inclinations of the particular cohort of individuals observed or to the specific historical times that those individuals are living through. Fagereng, Gottlieb and Guiso (2011) have collected portfolio information for a random sample of 75,000 Norwegian households from the 1995 population and then followed these households for 15 years up to 2009.

They find a clear hump-shaped pattern of the portfolio risky share for each cohort in the sample. FGG (2011) controls for unrestricted time effects by modeling cohort effects through variables that capture relevant experiences during formative years. Their main result is illustrated in Figure 6.

FIGURE 6 HERE

The average risky share invested in equity is high and perhaps slightly rising at the beginning of the lifecycle. It is flat at almost 50% until investors enter their 50s. At that point, it starts falling regularly by about one percentage point a year until retirement age. The pattern of the share invested in equity is remarkably consistent with the life-cycle portfolio models that we reviewed above.

Calvet and Sodini (2011) are the first to use a direct approach by estimating human capital for Swedish twins and testing whether the twin with higher human capital indeed invests a larger fraction of financial wealth in risky assets as predicted by the model. They control for a large set of household demographic, economic and financial characteristics including all those unobservable but common to each pair of twins. Most importantly, by measuring human capital directly and by comparing the allocation of individuals of the same age, as twins are, they can control for cohort and time effects. Consistently with Fagereng, Gottlieb and Guiso (2011), they find that indeed human capital has a positive effect on financial risk taking.

An interesting issue is how much do households lose by choosing not to rebalance their risky share over the lifecycle. Cocco, Gomes and Maenhout (2005) build and numerically simulate a life-cycle model of consumption and portfolio choice which allows for non-tradable and uncertain labor income as well as many other features that characterize a typical household environment such as bequest motives, mortality risk, non-standard preferences, uncertain retirement income and catastrophic labor income shocks. Gomes, Kotlikoff and Viceira (2008) investigate the welfare costs of departing from the optimal solution of the CGM (2005) model augmented with flexible labour supply. They find that life-cycle funds designed to match investor risk preferences and investment horizon have small welfare costs compared to the optimal choice. However, all other policies, including life-cycle funds which do not match investors' risk tolerance, can have substantial welfare costs. For instance, a time-invariant 100% bond allocation can result in a welfare loss as large as 46% of income at the beginning of the life-cycle if the investor relative risk aversion is 5 - and no less than 22% for investors with lower or higher risk aversion of 2 and 8 respectively. A constant 50-50 allocation rule, between bonds and stocks, results in a welfare loss of 15% of income for investors with risk aversion of 2, and 87% for investors with a high risk aversion of 8. These calculations suggest that investment rules that do not follow the recommended lifecycle pattern and do not take into account individual risk preferences can cause significant welfare losses if applied to a heterogeneous pools of investors.

3. Household borrowing decisions

Household debt has increased dramatically in industrialized countries around the world. Figure 7 plots the ratio of household debt to gross disposable income in Sweden.

FIGURE 7 HERE

It increased from less than 50% in 1995 to more than 85% in 2011. Spurred by the 2008 financial crisis, the interest on the liabilities of the household sector has dramatically increased among academics and policy makers. Models of optimal credit card and mortgage choices have been developed. Micro-data on household short and long term debt decisions have become available and allowed researchers to start evaluating the efficiency and welfare consequences of household liability choices. Most importantly, understanding how households choose to borrow and default on their existing debt in response to changes in interest rates has become a primary concern of monetary policy. Central banks and regulatory agencies are becoming increasingly aware of the need for micro data on household assets and

liabilities, as only the characterization of the cross-sectional distribution of household finances can offer reliable bearings for policy action.

3.1 *Mortgage choice*

Taking a mortgage is most likely the most important financial decision households make. Despite its importance, optimal mortgage decision making has received surprisingly little attention in the academic literature. Only recently, a number of papers have developed realistic models that take into account household characteristics that are salient to mortgage type choice. Campbell and Cocco (2003) are the first to study under which conditions the purchase of a house of a given size should be financed using a fixed rate (FRM) or an adjustable rate mortgage (ARM). In a fixed rate mortgage, the borrower pays a constant nominal amount per period and is thus subject to inflation risk. Additionally, to the extent that the expectation hypothesis does not hold (and there is ample empirical evidence that it does not), fixed rates carry a risk premium. ARMs are free from inflation risk, but they are subject to income risk. Since adjustable rates are indexed to short term rates that track inflation, the real value of mortgage payments is largely invariant over time. However, to the extent that nominal income is subject to shocks, and not fully and simultaneously indexed to inflation, variations in nominal rates may force substantial drops in household consumption and even default. Households should then choose a FRM if the higher interest rate premium compared to an ARM is worth the reduced income risk in excess of inflation risk. The model implies that risk averse families with highly volatile labor income risk and large liquidity needs should prefer FRM to ARM.

In accordance to the model, practitioners seem to recommend ARM to households that have high consumption habits compared to their income but, at the same time, that do not seem to discern the risks entailed by the two types of mortgages and tend rather to regard FRMs as unconditionally “safe” and ARMs as “risky”. Furthermore, financial advisors are inclined to recommend FRMs when long-term rates have recently dropped as if long-term rates were mean-reverting (a conjecture that has weak empirical support - Campbell, 2006).

Do households follow the precepts of the normative models? Koijen, Van Hemert and Van Nieuwerburgh (2009) study a unique dataset of half million US mortgages collected from 1994 to 2007. They find that when the interest differential between fixed and adjustable mortgage rates is high, households tend to choose ARM. Financially constrained households tend to choose FRM even though the effect is weaker than the fixed rate premium. Bergstresser and Beshears (2010) find instead that the qualitative risk aversion measure

elicited in the US Survey of Consumer Finances (SCF), does indeed predict that more risk averse consumers are more likely to choose an ARM, though effects are not strong and seem to appear mostly in latest waves. Overall households, at least in the US, seem to choose mortgages in accordance with the normative theoretical models even though price variables play a larger role than specific family circumstances.

Households not only should initially choose the right mortgage, they should also be able to administrate it efficiently. One dimension of mortgage management is principal repayment. Since interest rates on mortgages are typically higher than returns on financial assets, one would expect that unexpected favorable liquidity shocks, in excess of consumption and precautionary saving, should be used by households to speed up the repayment of their loans.

Vissing-Jørgensen (2007) uses the US SCF to calculate how much households could save in interest costs by drawing on "excess" liquid wealth to reduce their mortgages and home-equity loans. She finds that, in 2004, the household sector could have saved \$16.3 billion by managing more efficient principal prepayments.

3.2 Credit Card Debt

Contrary to mortgages and consumer loans, credit card debt is unsecured and is thus particularly helpful to households that lack collateral. In line with the evidence on mortgage principal repayment, Gross and Souleles (2002) and Bertaut, Haliassos and Reiter (2009) document that, in the SCF, almost all US households with credit card debt held a positive position in liquid assets, which was larger than one month's income for a third of the sample. Even more puzzling, this tendency does not seem to be restricted to households with low levels of income and education and thus is unlikely to be a mistake.

Lehnert and Maki (2002) propose an explanation whereby consumers strategically accumulate assets when planning to file for bankruptcy in order to convert them into items exempt from bankruptcy procedures at the time of filing. Indeed, US states with higher exemption levels are characterized by a larger fraction of households who hold both liquid assets and credit card debt. Bertaut and Haliassos (2006), Haliassos and Reiter (2005) and Bertaut, Haliassos and Reiter (2009) propose instead an "accountant-shopper" model, whereby the accountant-self has little incentive to pay-off credit card debt, as the shopper-self will then borrow and spend again. Telyukova and Wright (2008) and Telyukova (2011) argue instead that, since some consumer products can only be purchased with cash, it is valuable to have both credit card debt and liquid assets.

Detailed data on household liabilities is unavailable to researchers in Sweden. The only information available at household level is the total level of liabilities and thus it is impossible to analyze how Swedish households choose their mortgages, their consumer and credit card debt and if they borrow moderately or beyond their means. In particular, it is impossible to know how households react to changes in interest rates and how large are the welfare losses due to suboptimal debt decisions.

4. Consumers protection in financial markets

Consumer financial regulation has been a primary topic of public policy since at least the Great Depression of the 1930s. In 1933, the commission guided by Ferdinand Pecora uncovered a wide range of abusive practice perpetrated directly by banks and their affiliates that led to the Glass-Steagall act. The issue has gained renewed momentum during the Great Recession of 2008-2012, which has brought to light pervasive exploitation of conflicts of interest, widespread distorted advice on various consumer investment and financing decisions, and even outright frauds – as in the famous Madoff scandal and several others that did not make it to the press – that, jointly have destroyed people’s trust in the financial industry (e.g. Guiso, 2012).

In the US, the Great Recession has led to the creation of a new authority – the Consumer Financial Protection Bureau (CFPB) – whose purpose is, in the words of the US Treasury, “to rebuild trust in our markets, [by establishing] strong and consistent regulation and supervision of consumer financial services and investment markets [...] We must promote transparency, simplicity, fairness, accountability, and access. We propose: a) a new Consumer Financial Protection Agency to protect consumers across the financial sector from unfair, deceptive, and abusive practices; b) stronger regulations to improve the transparency, fairness, and appropriateness of consumer and investor products and services; c) a level playing field and higher standards for providers of consumer financial products and services, whether or not they are part of a bank.”

Though the need for consumer financial protection can simply be justified on the basis of the observed malpractices, one might wonder whether there are additional rationales provided by economic theory. Does the mere fact that individuals lack financial awareness and literacy justify the creation of a financial consumer protection agency? What is specific of financial products to deserve a type of consumer protection different from the one offered on other consumption goods? More generally, what are the “market failures” that require consumer protection in financial markets.

4.1 *The rationale for consumer financial protection*

In the public debate, the protection of retail investors is often advocated on the idea that abuses or malpractices made by a large financial institution may have small consequences for the institution but dramatic ones for small investors that rely on them. Even though fairness and distributional consequences should be carefully weighted in the design of regulations, consumer protection can be justified purely on efficiency grounds, i.e. with the purpose of eliminating market inefficiencies that harm overall welfare. It should be said, however, that such arguments could be just theoretical alchemies if consumer financial markets were small. If households relied on financial markets only sporadically and the use of financial instruments was very limited (and perhaps confined to the wealthy and most financially sophisticated segment of the population), the overall gains guaranteed by financial protection would arguably be relatively limited and probably insufficient to outweigh the regulatory costs. But when millions of consumers rely on financial products to invest their current and retirement savings, buy insurance against a variety of risks, and borrow in order to own their homes or maintain their lifestyles, failures of financial markets to work efficiently can have consequences of macroeconomic importance and cannot be ignored.

As Tufano (2009) points out, the financial services and products used by households constitute a substantial portion of the financial industry. At the end of 2010, according to the FED flow of funds, the total value of assets held by US households was \$72 trillion, of which \$48 trillion are financial assets and the rest tangible assets, mostly real estate. On the liability side, households have \$14 trillion in debt, of which mortgages are the biggest component. These figures are larger than the total value of assets and liabilities held by corporations. Corporations have \$28 trillion in assets, half in tangible and half in financial assets, and outstanding liabilities for \$13 trillion. Hence, households hold twice as much assets and at least as much debt as corporations. This picture extends to all advanced countries, including Sweden. In 2007 Swedish households had SEK2.2 trillion in liabilities (against 2.6 for non-financial corporations), and SEK7.7 trillion in assets (against 12.6 of non-financial corporations) of which 2.2 in financial assets^{2,3}. To the extent that market size is a measure of importance, the finances of households deserve at least as much attention as the finances of corporations. Thus, one justification for the creation of specific financial consumer protection

² A substantial fraction of US assets is held in retirement accounts, a form of savings much less important in Sweden where a large part of pension rights are accumulated through a pay-as-you-go defined benefit system.

³ Figures on the assets of the household sector beyond 2007 are not available since they cannot be collected anymore.

agencies, such as the CFPB in the US and the ESMA in Europe, is the widespread and fast increasing consumer reliance on financial markets, products and services.

Below we describe several potential reasons for consumer financial protection largely drawing on the arguments of Campbell et al. (2011).

Time and uncertainty. Financial product costs and benefits involve considerable time and uncertainty to realize with the consequence that personal experience accumulate slowly, if at all, and poor performance is hard to detect and, thus, difficult to rectify. Many financial decisions not only involve risks that normally do not fully occur, but also have consequences that unveil late in life, over several years if not decades. The consequences of an inappropriate mortgage, for example, may be understood only after many years the borrower has been repaying it. Similarly, the cost of a wrong investment strategy – e.g. poor diversification – may reveal only when a very bad shock occurs, and given that these are rare for some investors, such as those close to retirement, the time to recover could be too short. Learning from others could be a potential alternative from learning from personal experience; but it may be a poor substitute because financial decisions are often retained to be sensitive and people unwilling to report about them. Even more so, people may be even less willing to report their investment failures than their successes, biasing social learning.

In addition, consumers and intermediaries do not typically possess the same information and might have conflicting interests. Information asymmetries and diverging incentives may make it difficult to structure complete contracts that can foresee all possible contingences with limited possibilities of legal protection against adverse future events. While these problems are not specific to financial products, they can be more severe when consumers deal with financial markets. For instance, many consumers, particularly the poor, lack the financial means to use the expertise of a lawyer when structuring a financial contract. One rationale for consumer financial protection agencies is the possibility of pooling many consumers together in order to improve on financial contract completeness.

Limited cognitive ability. Consumers may be subject to behavioral biases, such as time inconsistent preferences, narrow framing and overconfidence, that limit their ability of using financial markets in an optimal manner. Even when they attempt to behave as optimizing agents, they may lack the cognitive abilities to do so and thus incur into repeated mistakes. Financial choices are inherently complex. For example, choosing the appropriate type of mortgage or its size entails a quite involved dynamic optimization strategy over a long

uncertain horizon which can be solved by well trained experts only by employing numerical solutions. Some aspects of optimal mortgage choice are not yet fully understood even in the academic literature.

Recent academic research has found that Finnish investors with better cognitive ability, as measured by their IQ, make better financial decisions (e.g Grinblatt, Keloharju and Linnainmaa, 2012). Furthermore, some of these traits seem to be innate and cannot be not easily overcome through learning. IQ, notoriously, has a strong genetic component. Cronqvist and Siegel (2012) argue, using data on Swedish twins, that even behavioral biases are innate.

Information reversals. The traditional view that consumers know better about themselves than producers and retailers is seriously challenged in modern times by the availability of advanced data gathering technologies on consumer preferences, health status, willingness to repay etc. (Kamenica, Mullainathan and Thaler, 2012). For instance, through the analysis of detailed phone records, cellular phone providers may know individual expected usage better than consumers themselves. In financial markets, a credit card company may know more about the probability of incurring in late fee payments than card holders themselves, and an insurance company may know more about the risks faced by a small firm entering a new market than the firm itself. Recently, the US press revealed that Target – a US retail chain store – is able to detect customers' pregnancy at early stages by observing the patterns of women's purchases. A highly valuable marketing information since pregnant women are more willing to change consumption habits and adopt new products. Vissing-Jørgensen (2011) finds that consumer purchases can be used to predict default probabilities: intermediaries can then target credit card ads on the basis of the observed consumption patterns of their customers.

Information reversal poses new challenges and raises new questions that are yet to be explored in the academic literature. How do financial firms use their informational advantage? Would customers benefit from unconscious information revelation? Do intermediaries have the right incentives to collect and reveal information to consumers? Such issues are of primary importance but are hard to answer in the absence of highly detailed data available to researchers and policy makers.

Public good externalities. Another classical rationale for intervention in financial markets is the presence of externalities. For example, positive externalities from human capital accumulation and home ownership have been cited to justify government subsidies to student loans and home mortgages, and household bankruptcy exemptions. Similarly, mortgage

defaults may have social costs that are not internalized by mortgage borrowers and lenders, as argued by Campbell, Giglio, and Pathak (2011) who find that home foreclosures reduce the prices of nearby properties and provide an additional rationale for policy interventions that reduce the incidence of foreclosures.

Trust and trust spillovers. Trust between parties involved in financial transactions is a key but often neglected feature. Trust is likely to matter in all transactions that involve a delay between the time of settlement and the time of delivery - a feature shared by virtually all financial transactions. Not surprisingly, when trust falls – as it happened during the recent crisis (e.g. Guiso, 2012) - financial markets stop functioning.

Trust towards a person or an institution is typically not only dependent on the behavior of that person or institution. Trust carries strong spillover effects and externalities with important consequences for financial markets. For example, losses of confidence in a financial institution can easily be caused by the conducts of other financial (or even non financial) institutions. To illustrate this point, figure 8 documents spillover effects in trust towards banks. As one would expect, panel A shows that trust in financial intermediaries drops with the number of times a person is deceived by a financial intermediary. More surprisingly, panel B shows that trust in financial institutions falls also with the number of times a person is deceived by a plumber.

FIGURE 8 HERE

It is likely that trust externalities have been critical in amplifying the recent financial crisis. In fact, among other things, the crisis brought to light diffuse opportunistic behaviors and some serious frauds. The emergence of Madoff 's Ponzi scheme has undermined the confidence not only of the direct victims, but of investors in general. Indeed, panel C of figure 8 shows that trust towards banks is lower in areas with a larger number of Madoff's victims.

Reputation spillovers are not limited to the recent crisis. For instance, the 1907 New York panic started when it became known that that Charles T. Barney, president of Knickerbocker Trust, had earlier business dealings with Charles W. Morse, who had previously been involved in a scandal. On October 21, depositors run on Knickerbocker Trust, which closed its doors. Bank runs quickly reached the trusts whose board members were linked to Barney, and panic spread across all New York Trusts, leading them to fail despite the fact that they were solvent. Today, widespread access to the internet is likely to make things worse. Trust

spillovers can spread much faster, are geographically unbounded, affect millions of people and can more easily propagate to unrelated agents and companies.⁴

Trust spillovers may thus be a serious threat for the stability of financial markets which in turn can be a serious threat for household savings. We view this as a critical reason for government intervention and the creation of monitoring agencies, such as the CFPB, aimed to restore and solidify faith and trust in financial institutions.

Market power. Finally, a classical market failure that can call for regulation is market power. Though financial markets are fairly competitive, in many retail financial markets there is significant price dispersion, which can reflect the existence of search costs that make some consumers willing to pay higher prices than they might find elsewhere. Search costs, in turn, give retailers a degree of market power, allowing them to charge prices above marginal cost. One example is the wide range of fees that are charged for nearly identical index funds based on the Standard and Poor's 500 index (Hortacsu and Syverson, 2004).

A certain degree of market power can also be achieved through switching costs. For example, since checking accounts are typically pivotal for the management of other financial services sold by the same bank (e.g. automatic private pension savings, payments of monthly mortgage and credit card balances), high account switching costs can grant the bank market power vis a vis these other services.

In a market with unsophisticated uninformed consumers, competition will not eliminate sources of market power but simply stabilize on a “shrouded” equilibrium characterized by unsophisticated investors paying higher fees for the benefit of the sophisticated who are instead enjoying favorable pricing (Gabaix and Laibson, 2005).

5. Policy measures and interventions

Consumer financial protection, broadly interpreted, can be achieved through various regulatory tools, ranging from interventions aimed at improving consumer awareness and competence, to measures that limit the scope and range of investor financial market decisions. The two extreme forms of intervention can potentially reflect two competing models of consumer protections (Barr, Mullainathan, and Shafir, 2008). The first has been a dominant

⁴ In California, investors of Cascade Acceptance – a private fund - claimed their money back right after Madoff's scandal. The fund closed with large losses among investors. Interestingly, Cascade Acceptance was geographically very far away from New York, where Madoff had its operations. In addition, Cascade Acceptance had no direct link to Madoff except that the fund owner was Jewish, like Madoff. This was the only analogy.

model over the most recent decades and is based on the idea that poor financial decisions are only the reflection of poorly informed consumers, and that intermediaries may have poor incentives to disclose information that is essential to sound financial decisions.

On the other hand, restrictions on the financial products and services that can be purchased or sold to specific consumers are justified on the ground that even fully informed individuals suffer from persistent biases that trigger systematic mistakes and poor financial decisions. Paternalistic restrictions to financial choices are then viewed as a way to protect consumers from their own mistakes.

In this chapter we review three types of interventions meant to: a) improve financial literacy and information, b) enhance trust and limit confidence spillovers, and c) adopt default options.

5.1. *Financial literacy and financial education programs*

As stated on the web page of the Consumer Financial Protection Bureau, “An informed consumer is the first line of defense against abusive practices”.⁵ There is a now rich literature documenting that a substantial number of individuals lack knowledge of even basic financial concepts (Lusardi 2007; Lusardi and Mitchell, 2007; Lusardi and Tufano, 2008). Figure 9 shows the distribution of financial literacy in a sample of Italian investors computed by Guiso and Jappelli (2008). The figure uses a standard index of financial literacy measured by the fractions of correct answers to simple multiple choice questions.⁶ As it can be seen, almost no investor gets all the answers right; the average individual answers correctly about 40% of the questions, and 55% of the subjects guess correctly at most three answers.

FIGURE 9 HERE

The results in figure 9 are far from being an exception and are instead representative of tests conducted across many countries, even those with a long history of well developed financial markets. These results clearly underline that there are large scopes for improvements in consumer financial literacy and perhaps in the ability of investors of making financial decisions. Financial literacy seem to allow people to exploit diversification opportunities and limit unnecessary risk exposure (Calvet, Campbell, and Sodini, 2007; Guiso and Jappelli, 2008), to time the market or change investment strategies promptly in response to changed circumstances (Guiso and Viviano, 2012), to avoid costly borrowing (Lusardi and Tufano,

⁵ <http://www.consumerfinance.gov/the-bureau/>

⁶ A typical questions asked in financial literacy tests is: “After two years how much would you have in your savings account if the interest rate is 5 percent per years and you have initially 1,000 dollars in your account? (a) less than \$ 1,000, (b) a bit more than \$ 1,100, (c) close to \$ 1,200.”

2009), for example by repaying debt when receiving large injections of liquidity (Vissing-Jørgensen, 2007), or by refinancing a mortgage when rates fall substantially (Campbell, 2006). This evidence is consistent with the idea that financial literacy helps improve financial decisions though the debate about its role is still open (Hastings, Madrian, and Skimmyhorn, 2012).

First, consumers could potentially reach optimal financial decisions by trial and error, irrespective of their financial literacy. Following Milton Friedman (1953), who first suggested that to be an excellent pool player, one does not need to be an expert in physics, one could argue that, in order to make sound financial decisions, one does not need to be a trained financial expert. Though learning through experience can be an important factor in financial decision making, there are however two problems with this argument. First, trial and error in financial decision making entails potentially large losses that could be avoided by providing financial education. Second, the most important financial decisions for consumers, such as taking a mortgage or saving for retirement, cannot really be tried out since they are made only rarely and their failures typically preclude second chances.

Second, it is very difficult to cleanly measure the effect of financial literacy on financial choices. The fact that investors with high financial literacy test scores seem take better decisions does not necessarily mean that financial literacy causes better outcomes. The reverse could equally be possible: those making better decisions – e.g. participation in the stock market – may have stronger incentives to accumulate financial knowledge. Additionally, one can test whether financial literacy helps avoiding mistakes only if the optimal choice is well defined. For example, are we sure that participating in the stock market (as those with high literacy do, e.g. Kimball and Shumway, 2006) is a better choice than staying out (as often those with poor literacy do)? Non participation, for those that lack the ability of managing their investments effectively, may be a better alternative than entering the stock market (Calvet, Campbell and Sodini, 2007).

Keeping these issues in mind, it is fair to say that the empirical evidence is consistent with the idea that literacy can help consumers make better financial decisions, though the magnitude of its contribution is still uncertain. Even less clear is the effect on literacy and on economic outcomes of financial education programs. We now focus our attention to the issue of financial education, the way it should be taught to consumers and which consumers should receive it.

Which notions should be taught? Finance is a vast and complex field. In some domains of choices, there is no agreement on what constitutes optimal behavior, especially when realistic features of investors and the environment they face - such as preferences, human capital, leverage and real estate - should be taken into account by the optimization model. There are however basic principles that all investors should be aware of. One such example is diversification. Teaching the advantages of diversification and how diversification can be achieved should belong to any sensible program of financial education. Furthermore, financial literacy measures reveal that a large number of investors (particularly the low income ones) ignore the meaning of diversification. In fact, financial literacy surveys and test responses are not only important measuring tools but also a good starting point to define what should be at the core part of financial education programs.

How should they be taught? There are at least two teaching styles that can be employed for financial education: principle-based and hands-on teaching. The principles-based method is administered through standard classes in the boardroom, where a teacher explains and illustrates a number of notions and concepts that are then assimilated and memorized by the participants. This education technique is well known and standard in all school programs and is characterized by lack of personal direct involvement in the teaching material. The hands-on approach instead exposes students to the experience and the *feeling* of the consequence of certain decisions (e.g. losing money if a risky investment is undertaken).

At present we have little evidence on which type of teaching style is more effective for financial education. The only study available is Drexler, Fischer and Schoar (2011), who consider the impact of two different financial education programs involving micro-entrepreneurs in the Dominican Republic. The study participants were randomized to be in either a control group or one of two treatment groups. Members of one treatment group were given principles-based financial education; members of the other were taught with a program built around simple financial management rules-of-thumb. The authors find that, one year after the treatment, there is no difference between the financial behaviour of the group who received the principles-based financial education and the control group (which received no financial education). They instead find statistically significant and economically meaningful improvements in the financial behavior of those who participated in the rules-of-thumb oriented financial education course. This suggests that teaching style matters and may be key to the success of financial education programs.

What is the effect of these treatments? Even more controversial and still unsettled is the evaluation of the effects of financial education programs and the mistaken behaviors they are supposed to correct. The available evidence on the success of financial education programs is still limited and not conclusive.

A first study conducted in by Bayer et. al. in 1996 but published only in 2009 relies on the fact that during the 1990s a large number of American workers were exposed to programs of financial education offered by their employers. Bayer et. al. (2009) find that workers that participated in these programs have a higher probability of participating in voluntary retirement plans and to contribute more to their plans conditional on participations; furthermore these effects seem larger among low-pay workers.

In general, even the use of field experiments, where a random group is “treated” with a financial education program while another group serves as control, and subsequently the financial choices of the two groups are compared, faces a number of challenges. First, participation in the treatment is voluntary and, as such, cannot be fully random. It may well be that those who participate are precisely the ones who care more about financial decisions or that have an intrinsic interest in financial matters, features that are not observable to the experimenter, and that bias the results towards finding a larger effect of financial education. This can be partly overcome by pre-testing the two samples and showing that there are no systematic initial differences in financial capability. Second, financial education programs are time intensive and the amount of time people can reasonably devote to them is limited. If no or little effect is found (as in many of the cases discussed in Hastings, Madrian, and Skimmyhorn, 2012), one cannot conclude that financial education is useless, as the measured impact may reflect a too small dose of the treatment.

What are the channels of influence? Supporters of financial literacy maintain that financial education reduces the number and size of financial mistakes that individuals make due to limited knowledge and information. Financial literacy empowers investors with the ability to decide on their own and thus diminishes their need to seek external guidance. Additionally, an informed and sophisticated investor is less likely to become victim of financial frauds and to be deceived by a smart but malevolent intermediary.

More controversial is whether financial education programs help investors to choose more rationally and be less prone to psychological biases, such as overconfidence and time inconsistency. If psychological biases are the reflection of the way individuals process information and are part of human nature, then financial education may be of little help. For

instance, Cronqvist and Siegel (2012) find that common financial biases have a very large genetic component and are thus unlikely to fade away with education. Mandell (2006) finds that American students that attended financial education programs while in secondary schools display similar biases of students that did not learn about personal finance. Similarly, Benartzi and Thaler (2007) stress limited success of employer sponsored financial education programs in de-biasing employees. It is worth noticing that financial education may even amplify psychological biases, for instance, by strengthening empowerment feelings and the tendency to be overconfident on the outcomes of financial investments.

All these issues are relatively unexplored and much more research is needed to clarify their importance. Clearly, the way financial education is administered to individuals is crucial to its success, but the best way to maximize its impact is yet to be understood.

Who should be treated? A very important issue is who should receive financial education. Implicit in the literature is the idea that investors should be targeted, possibly at various stages of their life cycles, e.g. when still students, then when workers and finally when retired. This approach tends to ignore that many investors make their financial decisions with the advice of a financial advisor or their intermediary (e.g. a bank employee, a broker or a mutual fund manager). If these figures lack financial proficiency, even in the absence of conflicts of interest, their ignorance will result in poor financial outcomes for consumers. Indeed it is largely ignored and taken for granted that advisors are financial experts and that intermediaries have strong incentives to train them well. In reality, advisors may simply be clerks with little background in finance and intermediaries have poor incentives to train them appropriately. As we mentioned in section 2.2, Bluethgen, Hackethal and Meyer (2008) indeed find large heterogeneity in the quality of financial advisors in Germany. Mullainathan, Nöth, and Schoar (2009) study the recommendations that trained auditors, acting as customers, receive from financial advisors. They find that existing investor biases are, if anything, augmented by professional advices.

Educating advisors instead of (or in addition to) clients may have a number of advantages. First, the number of subjects to treat would be much more limited reducing considerably the cost of education. Second, the education would be targeted to students that are naturally more receptive – if only because they have already some basic financial literacy. Third, teaching employees of financial intermediaries to recognize “good” financial decisions empowers them and makes them more aware of any distortion in the advise their employer recommends; this is particularly so if the training program is administered by a third party such as a public

body. Finally, it is much simpler and cheaper to educate the pool of advisors than the population of investors – an issue that is particularly important in light of the continuous financial innovation that characterizes today's financial markets and that makes financial recommendations fast obsolete.

5.2. Measures enhancing trust

We have argued that financial contracts are the trust-sensitive contracts par excellence. The importance of trust in financial markets has been overlooked partially due to the implicit assumption that misbehavior in financial contracting receives full legal protection. However, legal protection is never likely to be perfect, even in countries with particularly efficient legal institutions, and financial transactions are heavily affected by trust. Lack of trust can hamper the functioning of financial markets, and may thus result in potentially large losses for consumers.

This naturally leads us to ask which policies can help sustain a high level of trust in financial markets. We distinguish two types of trust-enhancing policies. The first type refers to company-level policies and is meant to raise trust in individual companies. The second type targets the whole industry and aims at avoiding the negative spillovers that misbehavior by one component of the industry has on the perceived trustworthiness of the other members.

Interventions to increase trust in individual companies

Companies do not always fully realize the benefits of trust-enhancing measures. They may simply be unaware of the direct consequences in the long-term or they do not have the incentives to fully internalize the spillover effects that lack of trust in one company has on the entire industry.

Improve consumer service quality. Customer satisfaction is one of the most important mechanisms that keep trust in financial institutions strong. Marketing strategies can be effective, but also employee remuneration policies, based on indices of client satisfaction, create an incentive to improve the relationship with customers, and, with it, the trust clients have in the company.

Protect the company reputation from internal abuses. Misbehavior by one member of a financial company can affect the trust that customers and non-customers have towards the whole company. Reputation concerns provide incentives for intermediaries to pre-empt

dishonest internal behavior. Yet, managers with very high turnover may have weak incentives to fully internalize the consequences on the company of the bad behavior of its employees. Loss of trust in one company can spillover to the entire industry, an effect that company managers can easily fail to recognize even when they have long horizon.

Employee misbehavior is more likely to emerge when: a) the company management has very short run objectives and is thus less attentive to long-term reputational risks; b) when employees feel poor attachment and loyalty towards the company. Policies that raise employee loyalty have a desirable side effect: they act as an antidote against behaviors that provoke reputational losses and loss of trust.

Industry-level policies to rekindle trust.

The policies illustrated are targeted to single financial companies. Trust spillovers suggest that industry-level measures are even more appropriate to protect consumers from market instability.

Adopt joint policies with other intermediaries. There is strong evidence that those who have little trust in one segment of the financial industry also mistrust other segments. For instance, those who lost faith towards the stock market during the Great Recession also lost trust towards insurance companies, banks, bankers, brokers and mutual funds (Guiso, 2012). This implies that policies aimed at rekindling trust in one segment of the industry are unlikely to be implemented since the benefits are not fully internalized by who bears the cost of the policy. An additional consequence is that combined policies aimed at increasing the level of trust in the entire industry have a very powerful effect.

Promote enforcement of punishment of financial fraud. A better legal enforcement of financial frauds results in a higher trust towards financial markets. Though this aspect is relatively general, it is of particular importance for those countries whose judicial system lags behind, as in several southern and eastern European countries.

Support the enforcement of punishment of single intermediary misbehavior. Misbehavior by one financial industry member destroys the trust that customers have in the other members of the industry. These spillovers imply that there is a role for industry level policies meant to set high standards of behavior and punish transgressions well and above any punishment that may follow from existing legal norms. Codes of conduct and strict rules of behavior shared by the

industry members, together with hard penalties to punish disobedience would greatly contribute to high levels of trust towards each single company and the entire industry.

Support policies that raise industry competition. A high level of competition in the financial industry is likely to have a strong effect on the trust people have on financial companies. In fact, a highly competitive market is one where consumers can switch intermediary, when not fully satisfied, at a very low cost and little effort. Competition empowers consumers and makes them more willing to take the risk of being betrayed: they have a powerful weapon to punish misbehavior. Anticipating the high cost of reputation loss, intermediaries have stronger incentives to behave fairly in highly competitive environments. Recent research shows that there is a positive link between trust and competition. Francois, Fujiwara, and van Ypersele (2009) argue that (firm-level) competition positively impacts (customer-level) trust.

5.3. *Default options*

An alternative or complementary regulatory strategy are “default options” (e.g. Thaler and Sunstein, 2008). A default option is a preselected list of financial products – such as a standard type of mortgage or a typical retirement plan – that are offered as a default to consumers that belong to specific groups – e.g. all the employees of a certain company when they choose their retirement plan. Default options are based on the idea that there are standard financial instruments, whose properties are well understood and that do not require particular management skills, that fit the needs of the vast majority of households. If these products are offered as “default”- that is as one chooses to do nothing - most customers will keep them rather than embarking on more complex choices that could lead to potentially costly mistakes. Several papers show that individuals tend to keep the best alternative when it is offered as default but they do not necessarily choose it when it is not the default option (Madrian and Shea, 2001; Choi et al., 2006; Carroll et al., 2009)

One example of default option could be a retirement default saving plan that offers an allocation tilted towards stocks at the beginning of the life cycle, with an automatic rebalancing rule towards bonds as people age. Such plan would avoid the tendency of individuals to choose a 50%-50% allocation at the beginning of their working career and to never rebalance afterwards, leaving them too exposed to the stock market when they retire.

Default option policies obviously have limitations. First, choosing which alternative to pick as default may, in some cases, not be easy. For instance, in the case of mortgages, should one consider as a default a fixed rate or a variable rate mortgage? *Ceteris paribus*, the optimal

choice hinges on individual risk aversion, which might change over time, is typically difficult to observe, and whose measurement might detract from the very essence of implementing default options: its simplicity. Hence, even if the default option may help protect consumers from choosing wrong alternatives, it imposes the same alternative to different individuals, which is likely to be a suboptimal choice. This suggests that default options should be used when the default is likely to be the best choice for most people, or when individual differences do not matter much in identifying the optimal choice. Second, because default options attract most consumers to a limited set of alternatives, they also discourage product innovation and the adoption of choices that could be superior to the default. Third, default options discourage experimentation and thus discourage learning and the acquisition of financial expertise, which could be valuable not only in relation to the given choice but also to other domains. Finally, because default options can be very powerful in guiding consumer decisions, and thus in diverting business, one would expect that intermediaries may put strong lobbying pressure on regulators when default options have to be chosen. The implemented default option may then reflect more the power of some of the intermediaries than the needs of consumers, and may be very hard to change once in place.

6. Conclusions

In this chapter we have provided an overview of the most recent advances in the theory and evidence of how households use financial markets to achieve their objectives and what can be done to best protect them when they do so. A recurrent theme is the ability of households to follow the optimal behavior predicted by normative models. In some dimensions households on average seem to act closely to the prescriptions of normative models - as when selecting among different mortgages - in others they seem to depart substantially - as when choosing how much to trade and in which individual stocks to invest. This heterogeneity is not only limited to different domains of choice, households display a wide range of behaviors even when confronted with the same decision problem. This evidence opens up the debate of whether household suboptimal choices are the result of mistakes or systematic behavioral biases, and leads *household* finance to border on *behavioral* finance. The view that departures from normative optimal behavior arise from mistakes is reinforced by the recent widespread finding that that more sophisticated (especially more educated and richer) households seem to behave closer to the prescriptions of normative models. An important task of household finance becomes then the identification of which mistakes are more harmful and which households tend to commit the largest mistakes.

The second task of household finance is to help identify how these mistakes can be avoided and how households can use financial markets to their benefit. Interactions in and with financial markets are characterized by informational frictions that sometimes may be exploited by financial intermediaries. In response to the growth of household finance, to the speed of innovation in financial markets and to the introduction of new complex products, particular attention should be devoted to shape regulations that make markets best serve consumer needs and contain consumer mistakes. We have reviewed this recent debate and discussed three alternative policies aimed at raising household financial knowledge, enhance trust in financial markets, and adopt default options. These, as well as other policies (e.g. information disclosure policies), are not mutually exclusive and none actually dominates the others. Indeed, each has its pros and cons and there is scope for a balanced adoption of each of them.

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A. Direct Stockholding

	Quartile I	Quartile II	Quartile III	Quartile IV	Top 5 %	Average
U.S.	1.4	6.9	20.6	47.9	70.1	19.2
U.K.	0	4.4	28.3	53.6	67.9	21.6
Netherlands	1.5	7.4	20	40.3	60.2	17.2
Germany	0.6	4.1	16.1	36.1	50.5	14
Italy	0	0.8	3.1	12.8	30.8	4
Austria	0	1.7	2.8	15.6	25.7	5
Sweden	12.9	30.7	46.9	72.8	80.6	40.8
Spain	0	0.3	1.8	13.2	14.4	3.5
France	0.7	9.9	14.6	33.3	44.2	14.4
Denmark	6.3	25.9	36.4	55.6	68.4	31
Greece	0	0.7	3.2	17.3	23.5	4.9
Switzerland	2.8	12.2	30.3	54.2	63.2	24.9

B. Direct and Indirect Stockholding

	Quartile I	Quartile II	Quartile III	Quartile IV	Top 5 %	Average
U.S.	4.4	38.3	66	86.7	93.7	48.9
U.K.	4.9	11.9	37.8	71.1	83.9	31.5
Netherlands	1.7	11	31.3	52.8	72	24.1
Germany	1.5	11.8	28.7	51.4	61.2	22.9
Italy	0	0.8	5.2	27.5	64.8	8.2
Austria	0	1.9	8.1	25.5	33.8	8.8
Sweden	25.8	63.4	82.7	92.9	95.8	66.2
Spain	0	1.1	3	19.1	24.6	5.4
France	1.1	17.6	29.9	57.6	67.3	26.2
Denmark	6.6	30.8	44.8	65.7	75.4	37
Greece	0	0.7	4	22.2	32.9	6.3
Switzerland	2.8	20	38.2	63.7	65.8	31.4

Table 1: Proportion of households investing in stocks. The first panel shows the proportion of households who owns directly stock in each quartile of gross financial wealth. The second panel shows the same proportion when we include also indirect ownership, via mutual funds or pension funds. Data for European countries is computed from the 2004 wave of the Survey for Health, Age, and Retirement in Europe (Share), and refer to year 2003. Data for the U.S. is drawn from the 1998 Survey of Consumer Finances. Data for the U.K. is drawn from the 1997-98 Financial Research Survey.

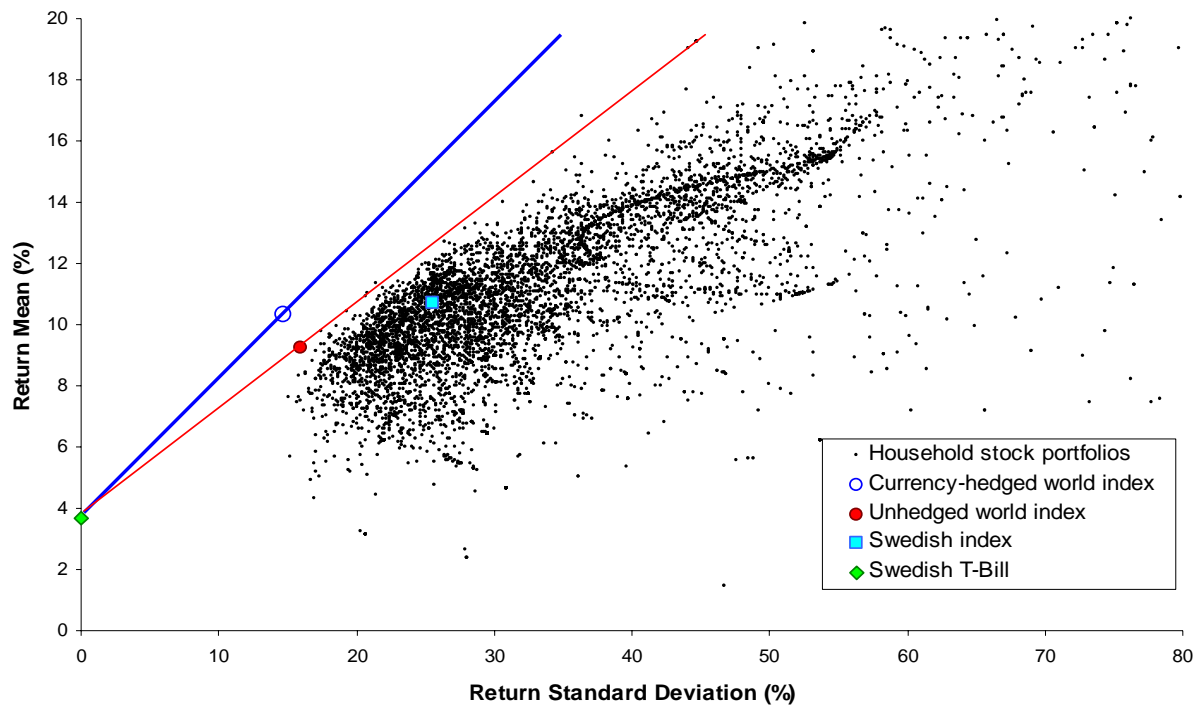


Figure 1. Diversification of the stock portfolio. The scatter plot illustrates the mean and standard deviation of Swedish participating household stock portfolio returns. The graph is based on a random sample of 10,000 households at the end of 2002. The mean return is inferred from the global CAPM, in which the currency-hedged world index (empty circle) is mean-variance efficient. Source: Calvet, Campbell and Sodini (2007).

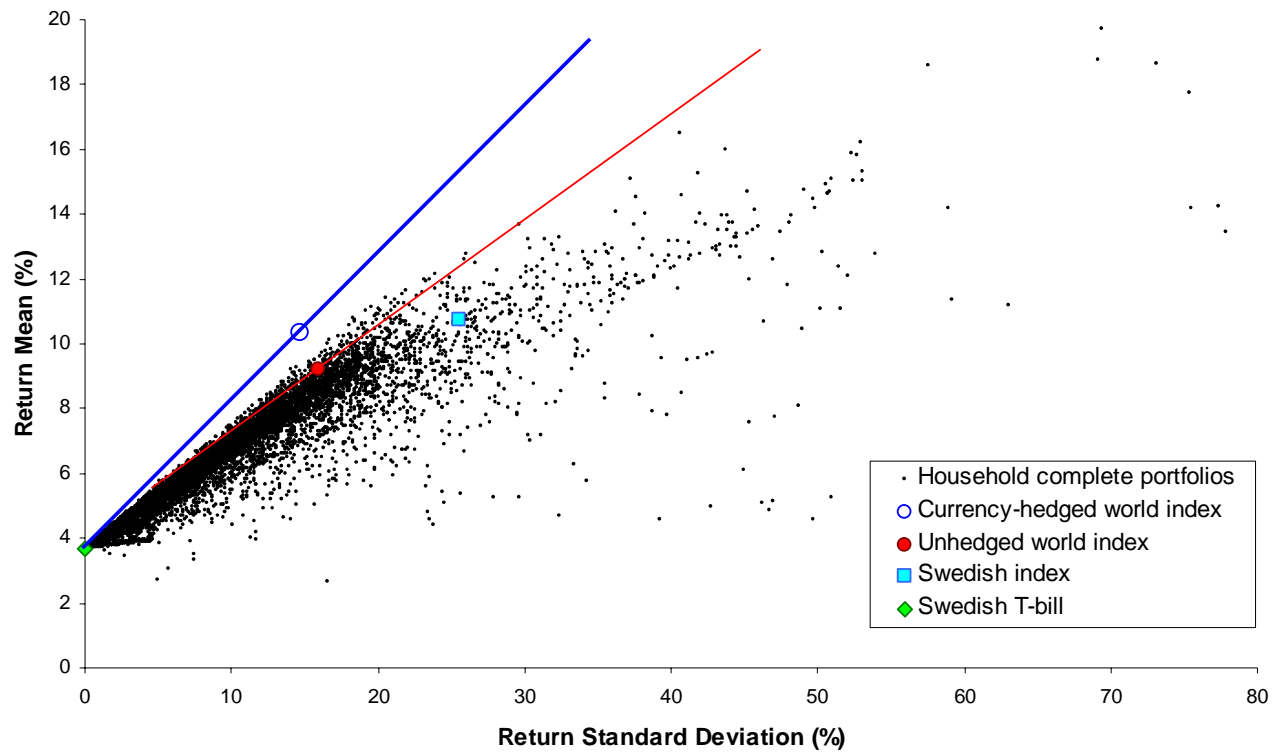


Figure 2. Diversification of the complete portfolio. The scatter plot illustrates the mean and volatility of Swedish participating household complete portfolios. It is based on a random sample of 10,000 households at the end of 2002. The mean return is inferred from the global CAPM, in which the currency-hedged world index (empty circle) is mean-varient efficient. Source: Calvet, Campbell and Sodini (2007).

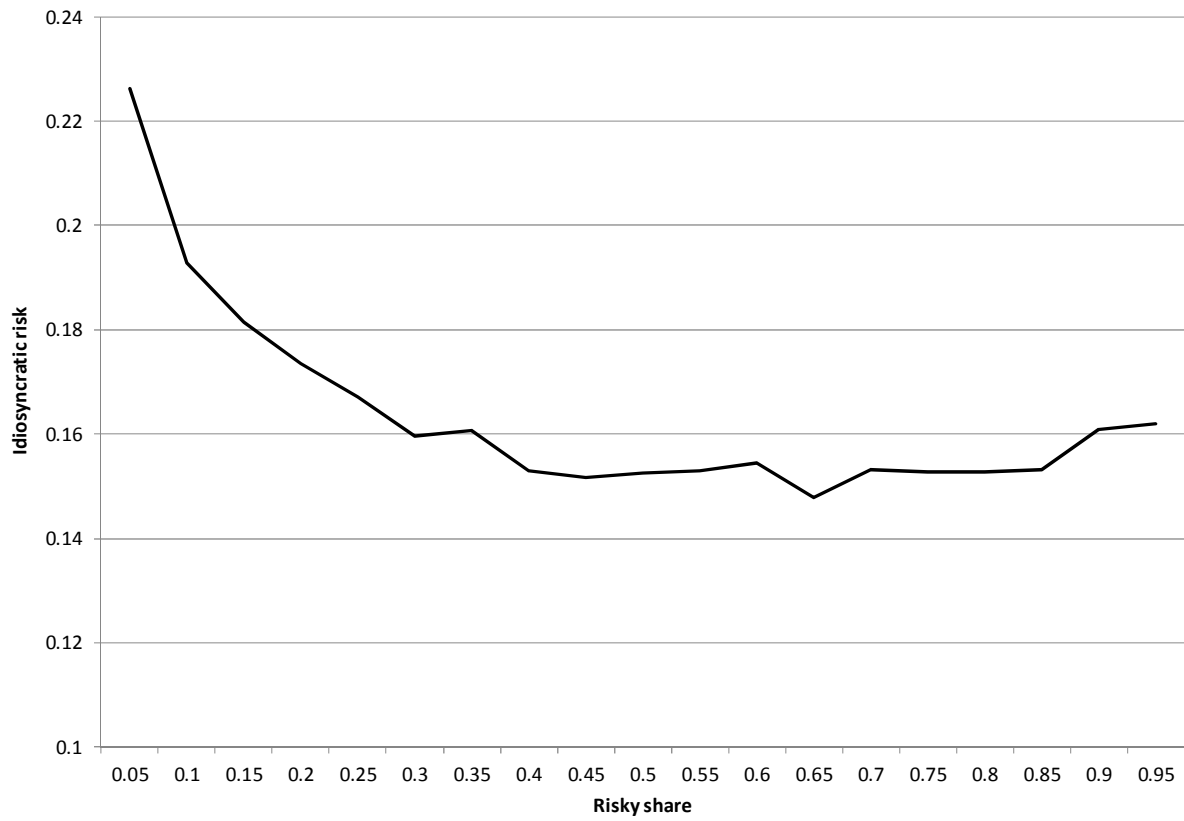


Figure 3. Diversification and risk taking. Average idiosyncratic risk of the risky portfolio by bins of the share of financial wealth invested in risky assets. Swedish participating households among 100,000 randomly selected households in the 2007 Swedish Wealth Registry.

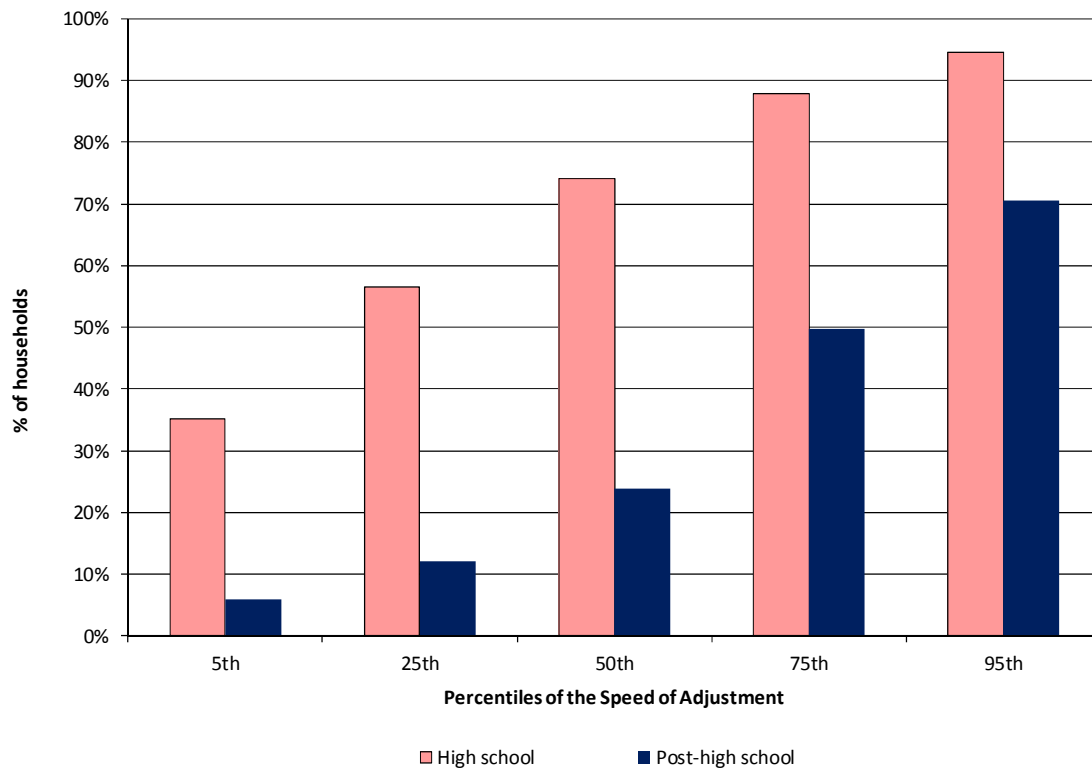


Figure 4. Portfolio adjustment speed and education. Fraction of households with high-school and post-high school education by 5-percentiles bins of speed of adjustment. Source: Calvet, Campbell and Sodini (2009a).

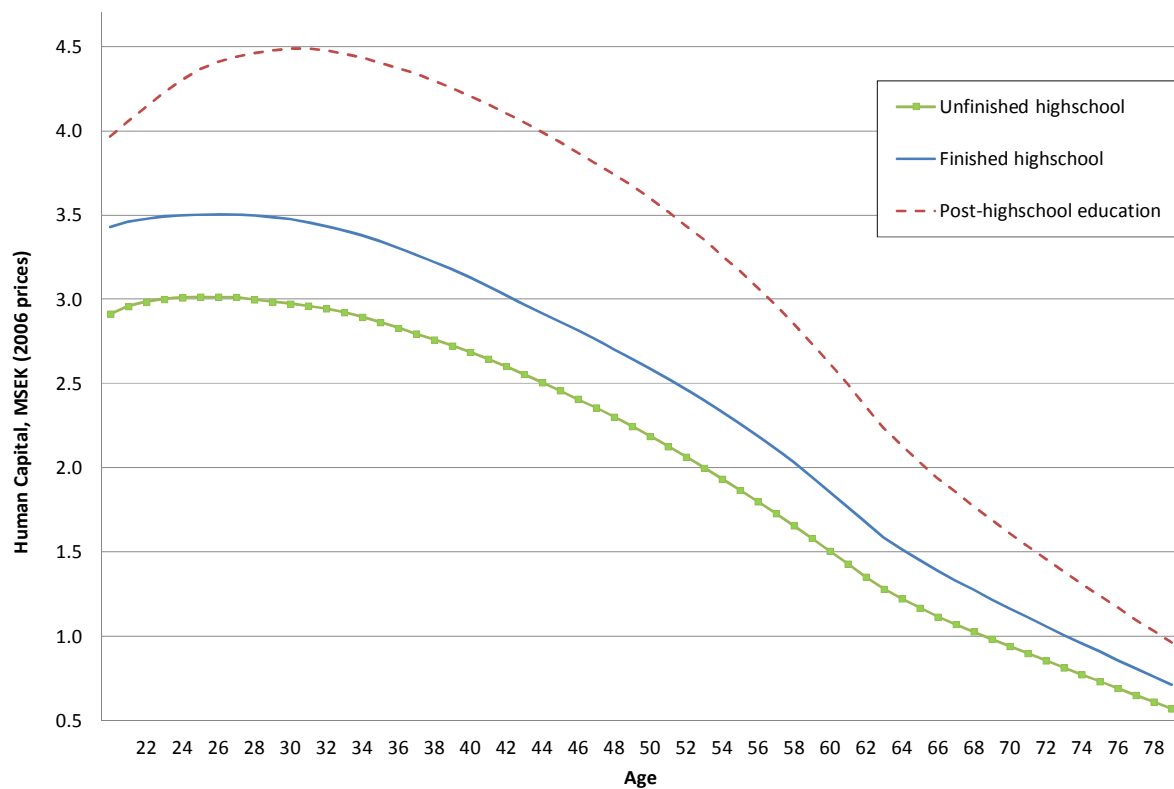


Figure 5. Human capital over the lifecycle. The figure plots the estimated human capital by education levels for a sample of Swedish individuals representative of the population. Human capital is estimated using the methodology of Calvet and Sodini (2012) and a discount rate of 5%. Human capital values are averages across individuals of the same age and education group 1999 to 2007.

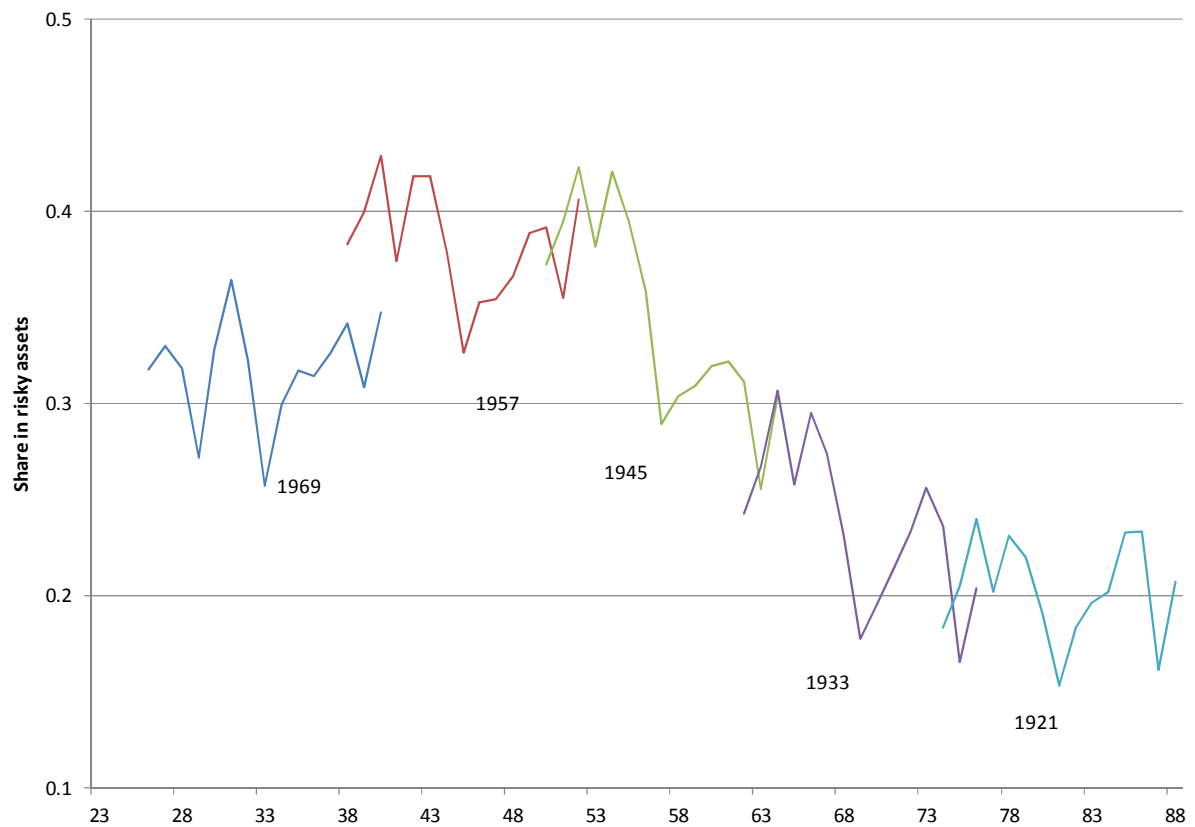


Figure 6. Age profile of conditional risky assets portfolio share for Norwegian cohorts.

The figure shows the share of total financial assets invested directly and indirectly in stocks over the life-cycle for several cohorts of Norwegian households that participate in the stock market either directly or indirectly through mutual funds. Source: Fagereng, Gottlieb and Guiso (2011).

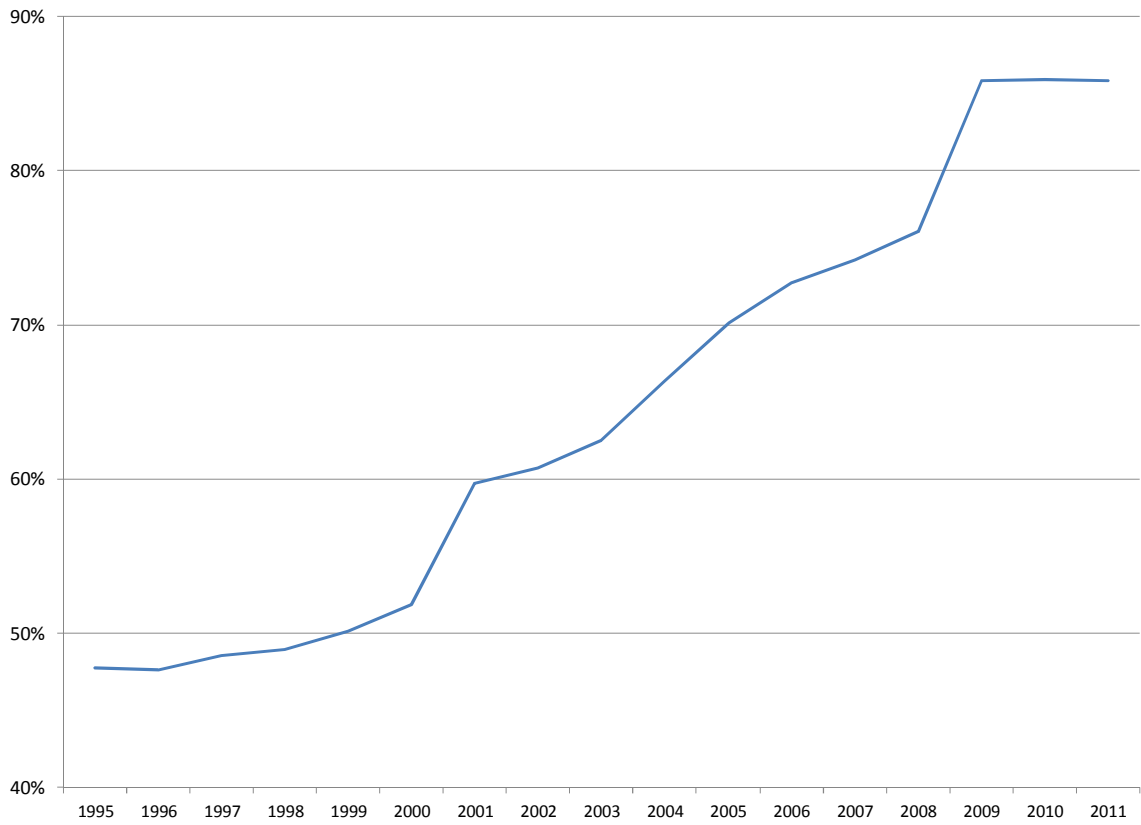
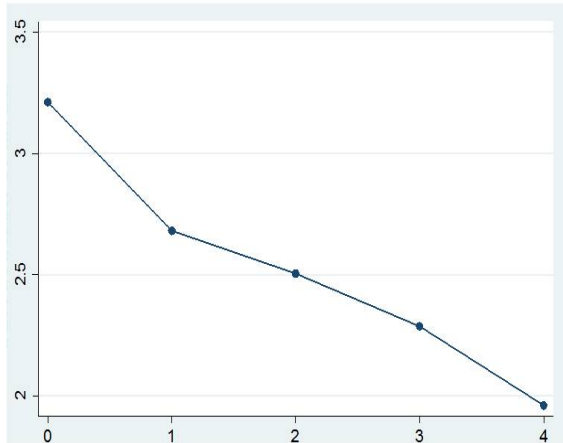


Figure 7. Liabilities as fraction of disposable income for the Swedish household Sector.

The figure shows the liabilities of the Swedish household sector as fraction of total gross disposable income.

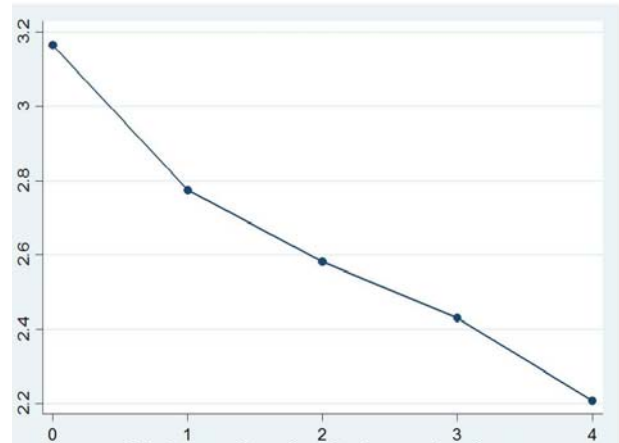
Source: OECD statistics.

A. Trust in banks and deception by a bank



Number of times a person is deceived by a bank or financial intermediary

B. Trust in banks and deception by a plumber



Number of times a person is deceived by a plumber

C. Effect of Madoff victims on trust towards banks

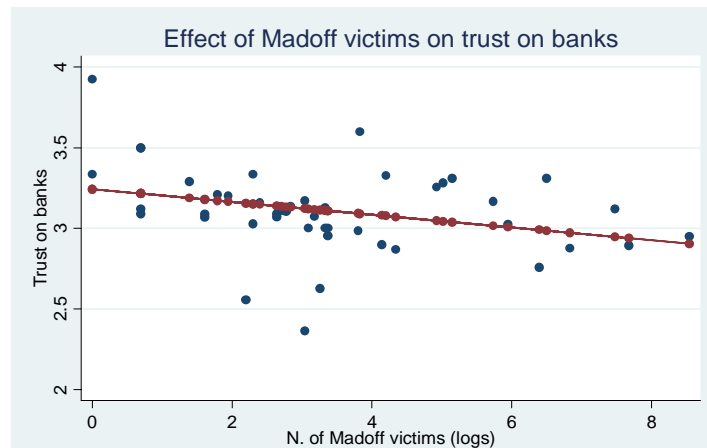


Figure 8. Trust spillovers. The figure shows the relation between how much people trust banks and financial intermediaries (vertical axes) and the number of times they have been deceived by a bank or financial intermediary (panel A) or the number of times they have been deceived by a plumber. Panel C shows, across US States, the relation between the number of Madoff's victims and the level on consumers trust in the area. Source: European Social Survey (wave II) for panels A and B; Trust Index Survey for panel C

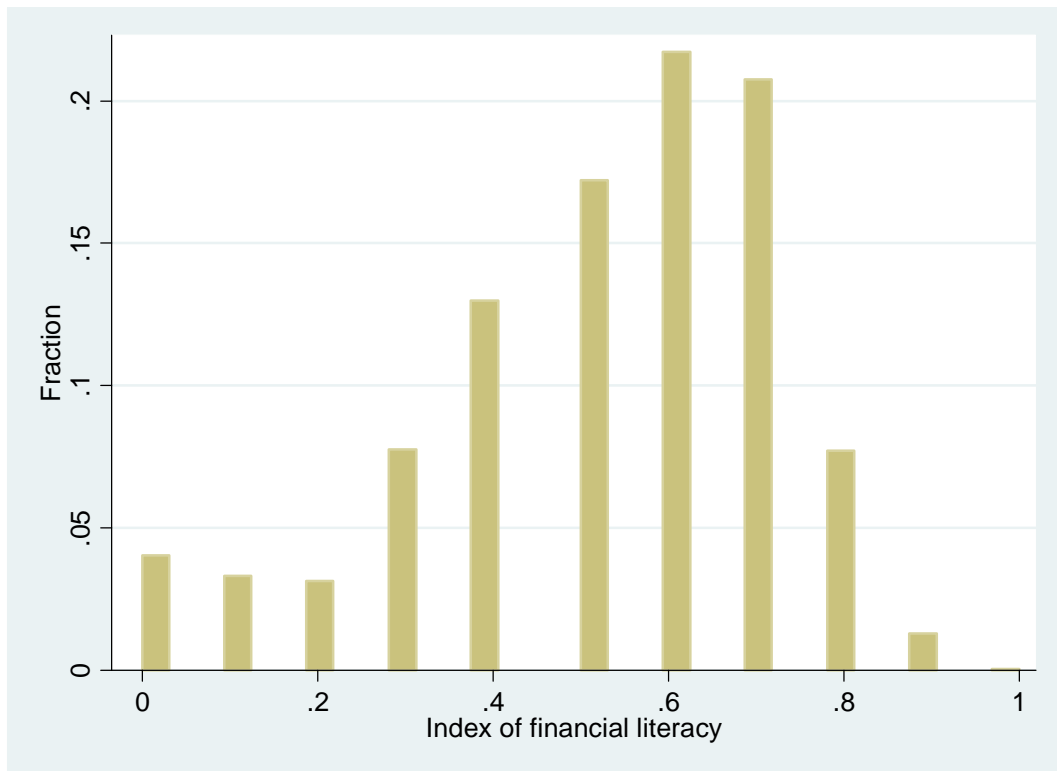


Figure 9. Index of financial literacy. The figure shows the cross sectional distribution of the fraction of correct answers to a list of eight financial literacy questions asked, in the 2007 UCS survey, to a sample of about 1,800 Italian retail investors. Source: Guiso and Jappelli (2008).