



Improving financial education effectiveness through behavioural economics

**OECD KEY FINDINGS
AND WAY FORWARD**

**IMPROVING FINANCIAL EDUCATION EFFECTIVENESS THROUGH BEHAVIOURAL ECONOMICS:
OECD KEY FINDINGS AND WAY FORWARD**

FOREWORD

Governments' attention is increasing around the world on the critical need to empower consumers through financial education. As governments launch new initiatives to improve their population's financial skills, demand has grown for research to guide the development of these initiatives as well as tools to improve their impact and effectiveness.

To address these demands, the OECD launched its financial education project in 2002, developing policy analysis and recommendations on principles and good practices for financial education and awareness with a focus on specific sectors such as credit, insurance and private pensions.

Building on this experience, the OECD established in 2008 the International Network on Financial Education (INFE) which facilitates information sharing, research and the development of policy instruments and analytical tools. More than 240 public institutions from 107 countries are members of the INFE and collaborate in the development of data, comparative analysis and global policy instruments in a consistent and systematic way.

Under the support of the Russia/WB/OECD Trust Fund for Financial Literacy and Education, the OECD has led the development and worldwide dissemination of the following three main types of products and tools:

- Broad and detailed reviews and inventories of effective financial education activities and policies worldwide, thanks to the wide membership and involvement of the OECD/INFE.
- Policy, analytical and comparative reports and research highlighting good practices and detailed case studies on financial education and literacy across member countries.
- Criteria, standards, principles and guidelines as well as practical tools to facilitate and improve strategic financial education efforts.

This book explores how the design of financial education programmes can benefit from the findings of behavioural economists and economic psychologists. In particular, it looks at the application of behavioural economics to the design of financial education programmes, and it provides an in-depth case study of an innovative application of lessons from psychology to a financial education programme in Brazil.

TABLE OF CONTENTS

EXECUTIVE SUMMARY	7
CHAPTER 1 CAN BEHAVIOURAL ECONOMICS BE USED TO MAKE FINANCIAL EDUCATION MORE EFFECTIVE?	9
1. Introduction	11
Scope and Definitions.....	11
2. Background and context	12
Why is financial education potentially so important?	12
Financial literacy among OECD member countries.....	12
Financial Education in the OECD and beyond	13
3. Behavioural economics and personal finance	15
Nonstandard Preferences	16
Time inconsistency	16
Reference-dependence	17
Social preferences.....	19
Non-standard beliefs.....	19
Overconfidence and over-optimism.....	19
Non-standard probabilistic thinking.....	20
Non-standard decision-making	21
Limited Attention.....	21
Emotions and Affect	22
4. Applying behavioural economics to financial education.....	23
Take-up and completion	23
Content, delivery and knowledge retention	25
Achieving and sustaining positive behavioural change.....	27
5. Behaviourally-motivated approaches to other policy instruments.....	28
Designing products and environments that encourage better choices.....	28
Regulation for consumer protection.....	31
Using behavioural economics to improve disclosure.....	31
Product/programme restrictions based on behavioural economics.....	32
Complementarities with financial education	33
6. Conclusions	34
References	36

CHAPTER 2 CAN ECONOMIC PSYCHOLOGY AND BEHAVIOURAL ECONOMICS HELP IMPROVE FINANCIAL EDUCATION?..... 49

1. Education, mind and behaviour – Where we stand51

2. Economic psychology or behavioural economics – Is there a difference?53

3. A List of Heuristics by Peter Earl54

 Heuristics and biases in acquiring information54

 Heuristics and biases in processing information.....55

 Heuristics and biases in choice.....55

 Post-choice heuristics and biases.....56

4. Financial education and economic psychology – A promising dialogue.....56

 In action – the Brazilian programme57

 In debate – choice architecture and policy-making60

 In the future – an interactive Museum of Economic Psychology to further develop financial education in Brazil and other countries63

5. Conclusions65

Notes65

References66

EXECUTIVE SUMMARY

This book explores the extent to which the design of financial education programmes could benefit from the findings of behavioural economists and economic psychologists.

The standard economics approach to financial education argues that financial consumers will behave in their own best interests if the financial market is perfectly competitive. The fact that they do not always act in this way is blamed on a demand side market failure – consumers do not have all the knowledge and information that they need. According to this analysis, the solution is therefore to provide information and education so that consumers are fully informed and the market can function properly.

In contrast, the psychologists and behavioural economists argue that even with knowledge and information, consumers still act in a way that is not in their own best interest. They do this because they are subject to systematic psychological and emotional influences. Given these psychological factors, financial education needs to address the fact that consumers require tools to help them act in a way that improves their financial wellbeing; just as dieters can benefit from tools to help them overcome a desire to over-eat. Unlike the economists' approach, this type of education does not need to focus specifically and solely on knowledge or information, but on new skills, self-awareness and techniques for self-improvement.

This book gathers a review and discussion of the literature on how behavioural economics can improve and complement financial education (Chapter 1), as well as an illustrative example of how to incorporate behavioural and psychological lessons into a financial education programme (Chapter 2).

Chapter 1 explains that the assumptions of rationality used by economists when they explore financial behaviour may not be appropriate if actual behaviour contradicts these approximations in systematic (rather than random) ways. The chapter investigates the extent to which behavioural economics might explain some of the problematic financial behaviours that are observed amongst consumers, including low levels of retirement saving and high levels of credit use. It also explores possible ways in which behavioural economics can help policy makers to improve financial education, from take-up to completion.

Attention is then turned to the complementary tools available to policy makers to help consumers overcome psychological constraints. These include supervision and regulation of financial services, and the design of default options. The primary conclusions that can be drawn from this chapter are:

- Consumers could be made aware of their own psychological biases and the methods to combat them through carefully designed diagnostic tools.
- Behavioural economics can be used to fine-tune a number of existing services and provisions to help to improve the efficacy of financial education. For example, it can be incorporated within the design of administrative processes, marketing materials, educational materials and delivery

mechanisms to improve take-up of education and relevant products, increase behaviour change following education and incentivise commitment and sustained behaviour.

- Financial education is only one of the relevant approaches that can be taken to help people avoid the consequences of unwanted psychological traits, and should be used alongside other policy tools such as regulation and product design. All of these tools can incorporate lessons from behavioural economics.

Chapter 2 considers how economic psychology and behavioural economics can help to improve financial education in the practical case of a programme for Brazilian school children. It starts by noting that the provision of knowledge and information in itself is not sufficient and that the information must be incorporated into daily life. It then goes on to describe an innovative solution developed in Brazil. The approach combines information and recommendations about personal financial issues with information about the way in which psychological factors may both help and hinder behaviour. This psychological guidance is intended to raise the pupil's awareness of their own traits and trigger discussions about the typical psychological factors that influence financial decision making.

The approach described also includes a simple diagnostic tool, as recommended in the previous chapter. This tool takes the form of a quick quiz that helps pupils to identify their own consumption type.

Some important conclusions can be drawn from this chapter:

- Behavioural economics and economic psychology can help to explain the shortcomings of traditional approaches to financial education, but more importantly, they can be employed in the design of more effective programmes
- Product design and product delivery can also be improved by applying the lessons of behavioural economics.
- Behavioural economics assumes that people will respond to certain situations or incentives in predictable ways. It is important that policies that draw on the lessons from behavioural economics do not disadvantage individuals or groups of people who do not behave in the ways predicted.
- Behavioural economics has not provided us with a clear understanding of the link between knowledge and behaviour, but it does help to explain why knowledge in itself may not be enough to *change* behaviour.
- Mechanisms that draw on behavioural economics to change behaviour are not universally welcomed. In some countries policy makers prefer to encourage responsible financial behaviours through highly personalised approaches rather than approaches that provide just one solution to everyone.

Chapter 1

**CAN BEHAVIOURAL ECONOMICS BE USED
TO MAKE FINANCIAL EDUCATION MORE EFFECTIVE?**

by
Joanne Yoong^{*}

This chapter investigates the extent to which behavioural economics might explain some of the problematic financial behaviours that are observed amongst consumers, including low levels of retirement saving and high levels of credit use. It also asks how behavioural economics can help policy makers to improve financial education, from take-up to completion.

Various tools available to policy makers to help consumers overcome psychological constraints are discussed. These include supervision and regulation of financial services, and the design of default options.

* Assistant Professor, National University of Singapore and Adjunct Economist, RAND Corporation, USA. This chapter was originally published in OECD (2011), “Improving Financial Education Efficiency: OECD-Bank of Italy Symposium on Financial Literacy”. The OECD is grateful to the authors for their valuable contributions. The views expressed here are the sole responsibility of the authors and do not necessarily reflect those of the OECD Committee on Financial Markets and the Insurance and Private Pensions Committee, the OECD Secretariat, the member or non-member countries

1. Introduction

Over the past few decades, trends in the financial markets as well as pension system reforms in many countries have expanded consumers' role in determining their own long-term economic security. At the same time, policy makers around the world have also become increasingly aware that many ordinary consumers are not necessarily able to shoulder this responsibility. Increasing financial literacy via financial education has long been regarded as the intuitive solution. Yet, the actual impact of various financial education programmes on knowledge and behaviour has only recently begun to be rigorously studied. The mixed results to date clearly suggest that successful financial education is a challenge not to be taken lightly.

Drawing on psychology and cognitive science, the rapidly growing field of behavioural economics suggests that financial decision making, as well as other types of behaviour, may be driven by systematic biases and heuristics beyond the scope of purely rational decision making. For policy makers, behavioural economics offers a new perspective on individual decision making and consumer protection, and increasingly features as a topic of dialogues around the world.

The goal of this chapter is to explore ways in which insights from the emerging field of behavioural economics can make financial education more effective. Sections 2 and 3 provide a relatively brief and non-technical selective review on financial education and behavioural economics to draw together much of the important work related to topics of household finance. Sections 4 and 5 discuss approaches to applying behavioural economics to the development and implementation of financial education programmes, as well as other policy tools related to consumer protection that complement financial education. Section 6 concludes.

Scope and Definitions

As a note to the reader, this chapter will focus on household financial decisions. Related topics such as entrepreneurship and business education are of significant interest but fall outside the scope of this discussion. In addition, it largely draws on evidence and experiences from OECD member countries, but also refers to other international settings when appropriate.

For the purposes of this chapter, it is useful to explicitly define certain terms that will be used throughout. As in OECD (2005), we define *financial education* as the process by which financial consumers improve their understanding of financial products, concepts and risks and, through information, instruction and/or objective advice, develop the skills and confidence to become more aware of financial risks and opportunities, to make informed choices, to know where to go for help, and to take other effective actions to improve their financial well-being. In this context, *information* involves providing consumers with facts, data and specific knowledge to make them aware of financial opportunities. *Instruction* involves ensuring that individuals acquire the skills and ability to understand financial terms and concepts through the provision of training and guidance. *Advice* involves providing consumers with counsel about generic financial issues and product so that they can make the best use of the financial information and instruction that they have received. We also define a *financial education programme* as a project or service (or a related collection of projects and services) that is systematically structured with the intention of meeting specific financial education goals.

We define *consumer protection* as overlapping with but distinct from financial education. The emphasis of consumer protection is legislation and regulation to enforce information disclosure and

standards of practice by financial institutions (that may include financial education), as well as mechanisms for consumer complaint and redress in the case of unfair, deceptive or fraudulent practices.

2. Background and context

Why is financial education potentially so important?

When compared to several decades ago, the financial environment for the average consumer today offers more opportunities for the individual to control his or her own finances. As a result of improved technology and financial innovation, consumers have experienced an unprecedented expansion of access to a growing array of sophisticated products and services (Dyanan, 2009). However, the complexity of the financial marketplace has introduced new pitfalls for the investor as well as greater potential for financial fraud and mismanagement. At the same time, there has been a transfer of financial responsibility away from states and firms towards households, firstly through the decline of public welfare policies and corporate social programmes, and secondly through the shift from defined-benefit to defined-contribution public and private pension schemes (OECD, 2005). The burden on households is even more significant in the light of growing life expectancy and long-term health care costs. Finally, these trends have distributional implications: if only the wealthy and well-educated have the financial skills to take advantage of these changes, the poor may disproportionately lose more than they gain, exacerbating existing inequalities in wealth and well-being.

Given these challenges, consumers' ability to make intelligent and responsible short and long-term financial decisions is more critical than ever. Financial education that effectively supports this ability has potential benefits for multiple stakeholders. For consumers, there is strong evidence that links more financial literacy to welfare-improving behaviour - more planning, more appropriate use of credit, more successful wealth accumulation lead to more successful financial well-being, which in turn is linked to greater long-term overall well-being. For the financial services industry, more participation and better-informed participants would increase demand for financial products, build competitiveness, promote market transparency and increase efficiency. Policy makers would benefit from a lighter regulatory and supervisory burden related to monitoring, intervention and redress in financial markets as well as a more successful environment for reforms. For the economy as a whole, more financially-secure households with higher savings rates should contribute to better-functioning markets, increased economic stability and development and a reduced need for future public expenditures.

Financial literacy among OECD member countries

An increasing number of countries have completed or are currently in the process of implementing financial literacy or capability surveys, helping policy makers to assess the baseline need for financial education at a population level. In 2005, the OECD (2005) first reviewed the surveys in 12 of its member countries. Since then, a number of new national surveys have been conducted and in October 2008, the OECD established the Financial Literacy Measurement Sub-group to address the need for internationally comparable survey data on financial literacy and capability. Over time, a surprising number of common policy-relevant themes have emerged

Firstly, a significant fraction of consumers have a limited objective understanding of financial issues or financial capability. For instance, in the recent 2009 United States National Study of Financial Capability, less than 10% of respondents were able to answer three simple questions about compound interest, inflation and risk diversification correctly (FINRA, 2009, Lusardi, 2010). In the United Kingdom,

more than 60% of respondents were identified as having at least one area of weakness related to financial capability (Atkinson et al, 2006)

Secondly, at the same time, many consumers may still be overly confident about their ability to manage their finances: in a typical example, in the same 2009 United States Financial Capability survey, almost 40% of individuals rated their knowledge as high or very high. This high self-ranking is consistent with findings from other surveys, but incompatible with the measured level of financial literacy (Lusardi, 2010). Similarly, in the Netherlands, almost 15% of individuals had poor financial knowledge but report that they have no need for extra information about financial matters (Cent1Q, 2007)

Finally, important patterns of intra-national disparity in financial literacy exist. Financial literacy is consistently correlated with education and income: the surveys persistently show that those with lower income and education exhibited the least knowledge.

Although very general, these findings clearly suggest a need for financial education. Importantly, they also draw attention to the need for design that goes beyond the simple presentation of facts and figures. Programmes need to take into account the requirements, interests and baseline skills of different target populations in mind in order to engage and motivate the consumer, while maintaining a delicate balance between increasing self-efficacy and creating potentially harmful overconfidence. In the implementation of any given programme, these and other challenges have not been easy to overcome, as the next section illustrates.

Financial Education in the OECD and beyond

Many governments and supervisory authorities in the OECD have a statutory objective of promoting public understanding of financial products and markets, with financial education as a central part of their efforts. For example, in the UK, the Financial Services Authority launched a programme called “Building Financial Capability” in 2003, headed by a public-private steering committee to improve overall financial education. In the United States, The Department of the Treasury established the Office of Financial Education in 2002 to promote access to financial education tools. It also coordinates the efforts of the Financial Literacy and Education Commission, a group composed of representatives from 20 federal departments, agencies and commissions. In Japan, France and the Netherlands, committees that bridge both the public and private sector have also been formed to provide national-level guidance on financial education (OECD, 2008).

Training consumers in financial matters is by no means new or unpopular, as shown by the large number of existing financial education programmes conducted by schools, employers, governments and other organisations. In its first major international survey of financial education programmes, the OECD (2005) found that three key subject areas stand out (and will be the focus of many of our examples to follow):

Firstly, given the shift towards defined-contribution plans and pension reform in many countries, programmes related to *savings and investment* for retirement are increasingly important. These primarily consist of education programmes provided by the public sector or consumer advocates as well as public education campaigns to encourage saving.

Secondly, the number of consumers in the OECD with mortgage credit has increased primarily as a result of low interest rates, rising house prices and deregulation. Credit card usage has also grown substantially over the last several decades mainly as a result of product innovation. In response to the

increase in household debt, programmes focused on *credit and debt* have also increased in the last few decades. These include both preventive credit-management education as well as programmes targeted at consumers in need of credit repair.

Thirdly, as financial markets gain in sophistication, a surprisingly large proportion of consumers remain excluded from the financial mainstream. For instance, in 2009, approximately 25% of the population in the United States were “unbanked” or “underbanked”, i.e. either having to rely on alternative financial services or lacking a bank account altogether. The poor, less-educated and certain minorities are disproportionately represented among this group (FDIC, 2009). While large financial institutions are often not aggressive in marketing to such consumers, lack of understanding of how to obtain an account and the benefits of having an account also form an important barrier to participation. A number of programmes focus on *financial inclusion*, in order to help the poor increase their savings and avoid expensive and sometimes exploitative alternative financial services.

In the period following this initial survey, financial literacy programmes have continued to grow and evolve. In 2007, a survey of the EU27 member states by the consulting firm Evers and Jung found over 150 financial literacy initiatives, with an increasing focus on the use of internet delivery (Habschick et al, 2007). In 2008, the OECD (2008) released a study reviewing financial education programmes related to insurance and private pensions that also reflected an expansion among member countries as well as more use of websites and internet tools. In the wake of the financial crisis, several countries have intensified existing programmes, or instituted new ones, to address the adverse effects on households.

However, the substantial variance in the specific form, content and delivery of these programmes emphasises the fact that while the concept and topics may be general, financial education itself far from being a generic intervention. Most of the (non-school based) programmes reviewed relied on traditional print media and the internet as primary forms of dissemination. More costly methods such as face-to-face interaction were less frequently used, depending on the context: for instance, programmes that target the unbanked primarily rely on training courses and less frequently on internet delivery.

Despite this seeming abundance and diversity, critics argue that no strong evidence exists to show the effectiveness of financial education. Seminal studies in the early research literature on financial education in schools and workplaces found positive and statistically significant effects on individual financial behaviour (Bayer et al. (2009); Bernheim et al. (2001, 2003)).

However, as evaluation has become more widespread, the evidence base has grown to include results from a growing number of different programmes. The sum of findings to date is also decidedly more mixed. There is much support for the view that financial education programmes can positively affect financial knowledge and expressed intent to adopt desirable financial behaviour (see for instance, Braunstein and Welch (2002) and Martin (2007) for a general review of findings drawn from the United States). In a related but separate literature, multiple studies have convincingly linked financial knowledge to such behaviour (Lusardi and Mitchell, 2007, 2009; Lusardi, 2008; Lusardi and Tufano, 2009; van Rooij et al, 2009).

However, few studies have been able to actively demonstrate a compelling and direct relationship between financial education and behavioural change. The evaluation of a retirement savings seminar by Clark et al. (2006) is an illustrative example: while respondents reported changing goals and intentions to save immediately after the seminar, a follow-up survey found only weak links between these intentions and actual changes. In addition, even when effects are present, their magnitude may be relatively small

compared to estimates of the effect size from other factors, such as peer effects (Duflo and Saez, 2003) or psychological responses to features of the choice environment (to be discussed in Section 3).

In the absence of unambiguous supporting evidence in favour of financial education, some have argued that financial education does not “work”, advocating instead more paternalistic interventions. More emphatic critics further argue that financial education may even be counterproductive, as false confidence or feelings of guilt generated by programmes may themselves be detrimental (Willis, 2008).

The current lack of conclusive results may partly be attributed both to the variety of programmes as well as the state of systematic evaluation. Firstly, the chain of relationships linking education and behavioural change is complex, involving a progression that is not necessarily linear from education to knowledge and motivation, intentions, and finally actual behavioural change. Many programmes are designed with fairly modest aims of addressing only one part of this chain, and expectations for individual programmes should therefore be benchmarked against their intended scope (Lyons et al., 2006). Lusardi (2008b) notes that it is hardly surprising to find that one retirement seminar does little to change behaviour, or that widespread financial illiteracy cannot be cured by a one-time benefit fair; whereas evidence shows that programmes with a sustained series of education sessions can be effective in stimulating saving. Secondly, true impact evaluation is still often not performed, particularly in circumstances where either the scope or the budget of the programme is limited. Very often, managers lack the financial and human resources to track behavioural change or even to rigorously measure skills acquisition, and are able to at best monitor delivery outcomes or customer satisfaction (Lyons et al. 2006). At this stage, rigorous large-scale meta-analysis of interventions across programme types and settings remains largely infeasible.

Indeed, given that financial education is not a generic intervention, the question of whether financial education as a whole works or not is inherently ill-posed. Like many other policy instruments, financial education should not be regarded as a silver bullet, and much depends on the specifics of each programme. When poorly implemented, it can be wasteful, ineffectual or even counterproductive; however, in many settings, it is appropriate and useful. As a practical matter, the overwhelming concern for many policy makers and practitioners relates to what works best: when financial education is part of an overall solution, how can it be made most effective?

3. Behavioural economics and personal finance

Under the standard assumptions of economic theory, decision makers are perfectly rational and able to fully utilise all the information available. They make optimal choices that maximise the expected value of their private utility, based on preferences that are consistent across time and independent of context. While these assumptions are far from approaching the reality of everyday human beings, economists have long argued that they were never meant to do so - rather, they provide mathematically tractable and empirically reasonable approximations for the modelling and analysis of actual behaviour.

A growing body of evidence across multiple domains of observed behaviour, however, suggests that this rationale does not always hold true - we find systematic biases and anomalies as well as common decision making heuristics that contradict the predictions of models populated solely by *homo economicus*. The emerging field of behavioural economics draws on insights from psychology and cognitive scientists to study aspects of behaviour in various market settings that deviate from these standard assumptions.

In this section, we provide a review of key concepts and terms currently used in behavioural economics. For clarity and structure, we employ the taxonomy used by DellaVigna (2009), who considers three broad categories of anomalies or deviations from the standard model, namely non-standard preferences, non-standard beliefs and non-standard decision making processes. In each case, we provide illustrative (but certainly not exhaustive) examples from the empirical research literature relevant to personal finance (specifically, money management and household expenses; consumer credit; real estate; savings and investments; insurance and annuitisation), drawing as far as possible on research based on demonstrations in the field rather than the laboratory.

Nonstandard Preferences

Time inconsistency

As a first point of departure from the standard model, consider that individual preferences may not be stable, but instead change over time - for instance, the same person may have different short- and long-run discount rates. Such *time-inconsistency* implies that this decision maker will have different preferences over the same future plan at different points in time.

A particularly familiar form of this phenomenon is *hyperbolic discounting*, or the tendency to discount the future more steeply in the immediate rather than the distant future (Laibson, 1997; O'Donoghue and Rabin, 1999). This can result in present-bias and problems with self-control, especially when presented with a course of action with large delayed benefits but small short-term costs. Hyperbolic discounters may sincerely wish to achieve certain long-term welfare-improving goals (becoming a regular at the gym, losing weight on a steady diet or keeping to a budget), but constantly risk being overwhelmed by the need for immediate gratification.

Individuals who are aware of their own proclivities may seek out commitment devices to constrain their future selves (Laibson, 1997). On the other hand, naive present-biased individuals are likely to overestimate their ability to resist temptation and underestimate their own inertia, leading to procrastination over unpleasant decisions (O'Donoghue and Rabin, 2001).

Models that incorporate time-inconsistency, self-control problems and procrastination can explain many undesirable aspects of financial behaviour, particularly in the context of saving for retirement. Self-control problems provide an intuitively appealing explanation for persistent individual undersaving (Laibson et al. 1998). Such models can also explain more complicated puzzles. For instance, households in the United States tend to incur high-interest credit-card borrowing while simultaneously accumulating low-returning retirement assets. Laibson et al. (2007) suggest that individuals' short-term impatience leads them to spend liquid assets and use credit cards, but they then knowingly commit themselves to building long-term wealth by investing in illiquid assets.

Saving for retirement. A strong implication of time-inconsistency is that relatively small transaction costs or burdensome paperwork can be a real barrier to action, including participation in retirement savings plans (Choi et al. 2002). In the United States, Madrian and Shea (2001) find that an individual's participation and allocation of contributions is highly sensitive to enrolment defaults. Subsequent research by Choi, Laibson, Madrian, and Metrick (2004) shows that individuals consistently follow the path of least resistance and/or procrastinate when making such decisions. Cronqvist and Taylor (2004) find similar evidence for the default effect in Sweden.

Credit and Borrowing. Individuals who have self-control problems may also be particularly susceptible to over borrowing, whether from mainstream providers or alternative financial providers. Meier and Sprenger (2010), for instance, show that present-bias is positively related to increased credit-card borrowing. Individuals' naivete about their problems may further compound poor credit management. Earlier research by Ausubel (1999) shows that people will choose a credit card with lower short term "teaser" interest rates and higher long-term rates over the opposite, as they naively believe that they will not borrow much on a credit card, past the teaser period. Skiba and Tobacman (2008) examine default data from a payday lender in the United States and finds that the average defaulter has already repaid 90% of their original loan principal. This finding suggests that payday loan customers borrow in the short-term expecting to borrow less in the future. However, instead of rationally defaulting earlier to avoid paying the large interest costs of the loan, they then procrastinate on defaulting, which can have monetary, time or stigma costs.

Reference-dependence

Another departure from the standard model relates to reference-dependence, or the perception of value in relative rather than in absolute terms. When this is the case, the presentation or framing of choices becomes critically important, as preferences may be reversed when the same problem is framed in different ways.

In prospect theory, Kahneman and Tversky (1979) suggest that individuals derive utility from wealth based on differences from a given reference point rather than its absolute value. In particular, individuals tend to view gains and losses differently: those who are *loss-averse* weight the negative utility of losses more than the positive utility from the same amount of gain. A related manifestation of reference-dependence is the *endowment effect* (Kahneman et al, 1991), which leads individuals to value objects that they are endowed more than their actual willingness to pay for the same object. In combination, loss aversion and the endowment effect can result in *status quo bias*, or an inherent preference for one's current state.

Another form of reference-dependence is as follows: in standard economic models, individuals evaluate decisions in the context of all other decisions that they face, and the utility of a particular decision is derived only indirectly via its impact on total wealth. *Narrow framing* refers to the tendency to treat the outcome of decisions in isolation. Thaler (1985, 1999) and Shefrin (1988) describe a series of cognitive processes that embody reference-dependence called *mental accounting*: individuals organise, evaluate and keep track of financial activities in a manner analogous to real accounting systems. Sources and uses of funds tend to be grouped using categories (housing, food, etc) with implicit or explicit budgets, and balancing of these "mental accounts" may take place at particular intervals.

Loss Aversion in the Housing Market. In a study of the housing market in Boston, Genesove and Mayer (2001) find that sellers tend to be loss averse. Their purchase price is a highly-salient reference point, resulting in list prices for units that are too high for units predicted to sell at a loss.

Selling Winners and Holding Losers. The trading behaviour of individual investors in the stock market is consistent with loss-aversion, generating anomalies such as the *disposition effect*: investors who find it unpleasant to realise losses have a tendency to sell winners and hold on to losing stocks (e.g. Grinblatt, 2001, Shefrin, 1985, Odean 1998; Barber, Odean and Zhu (2009)).

Myopic Loss Aversion in the Stock Market. When investors are loss averse and also tend to evaluate their portfolios very frequently, this combination can lead to an excessive tendency to avoid taking risks,

or myopic loss aversion (Thaler et al 1997, Gneezy, Kapteyn and Potters, 2003). Myopia, in this context, refers to an inappropriate treatment of the time dimension. For example, bad news from one day to the next (“the market value of an investment fell since yesterday”) is treated in the same way as bad news referring to a longer period (“the market value of an investment fell since last year”). Benartzi et al. (1997), Gneezy and Potters (1997) and Gneezy, et al. (2003) show that, for investors in the U.S. and Holland, the more frequently investors receive information, the more risk averse they become. Investors who are myopic may sell out of risky assets too quickly in a downturn and buy back in too late in a recovery, resulting in permanent losses that could have been avoided by a longer-term perspective. Benartzi and Thaler (1995) posit that the large premium required by investors with myopic loss aversion may be able to account for the equity premium puzzle.

Overinsuring Small Risks. Loss aversion can have important implications in an insurance setting. Consumers who are loss averse may overinsure small risks, where the expected value of the loss is small relative to the cost of the insurance (e.g. mobile telephone equipment insurance, or insurance bundled with ticket sales that covers cancellation of the event). Sydnor (forthcoming) shows that the premiums paid for such insurance schemes are puzzling in the context of the standard model but can be explained by a combination of loss aversion and overweighting of loss probabilities.

Narrow Framing in the Stock Market. One form of narrow framing is the tendency to treat new gambles and other risky decisions as if utility comes directly from the gamble itself, rather than considering the gamble in the context of all other risks currently faced by the individual. In the stock market, Barberis, Huang and Thaler (2006) find that investors with a diversified portfolio appear to derive utility from the fluctuations in their stock investments, independent of the overall fluctuation of their entire wealth portfolio.

Mental Accounting in Household Financial Planning. In overall financial management and planning, when households have multiple financial accounts, funds are often not “fungible” even within households or individuals. In the context of retirement savings plans in the United States, Card and Ransom (2007) find that individuals treat their own savings and employer or government contributions as if they are coming from different mental accounts. Choi et al. (2009) show that individuals tend to make decisions about one investment account without considering the allocations in their other accounts. As a result, framing matters: Benartzi and Thaler (2002) find that the choice of retirement savings portfolios varies significantly when portfolio choices are re-framed in terms of ultimate outcomes (i.e. projected retirement income).

Saving Out of Tax Refunds. Lump-sum transfers may be easier to save because individuals account for these funds differently from regular income flows, seeing them as surplus or bonus funds that can be saved (Shefrin and Thaler, 1988; Thaler, 1994). Research on the uses of refunds from the Earned Income Tax Credit in the United States has found that many recipients either save a portion of their refund or use refund dollars to purchase relatively expensive durable goods such as appliances or autos (Tufano and Schneider, 2008)

Framing and the Demand for Annuitisation. While rational models of risk-averse consumers have difficulty explaining limited annuity demand, Brown (2007) and Brown et al (2008) propose an alternative view based on framing. When consumers think in terms of consumption, annuities are seen as valuable insurance, whereas when consumers think in terms of investment risk and return, the annuity is perceived as a risky asset because the payoff depends on an uncertain date of death. Brown et al (2008) show individuals prefer an annuity over alternative products when the question is framed in terms of consumption, but the reverse is true when information is presented in terms of risk and return.

Social preferences

Preferences can also be defined over interactions with others in several ways. Researchers have found that the savings and investment decisions of community members and peers have a causal effect on individual savings and investment decisions, through direct social interactions such as straightforward word of mouth or learning by observation (e.g. Brown et al, 2008c; Duflo and Saez, 2003; Grinblatt, 2001b; Hong et al, 2004). In addition, direct or indirect social pressure (such as the implicit desire for conformity, acceptability and social identity) can powerfully affect decision making (Bikhchandani et al, 1998). In a striking experiment, Benjamin et al (2010) find that when ethnic identity is salient, people tend to conform to ethnic types when making risky choices. Finally, individuals may also have strong preferences over socially-defined values such as altruism, reciprocity and inequity. For instance, altruistic individuals may derive utility - the warm glow effect - directly from the utility of others (see Fehr and Schmidt (2006) for a detailed review of this literature).

Social interactions in stock market investing. In investing, effects of social interactions have been found in remarkably varied settings. Hong, Kubik and Stein (2005) find that U.S. households with high social interactions more likely to invest in the stock market than non-social households. Brown et al (2008) also show a causal relation between an individual's stock ownership and average community stock market participation (and further show that the results are stronger in more sociable communities). Using data from 10 European countries, Christelis, Jappelli and Padula (2005) find that social interactions significantly affect stockownership (especially in Mediterranean countries). In China, Ng and Wu (2006) also document strong word of mouth effects in trading decisions.

Taxpayer Compliance. The behavioural aspects of tax paying behaviour are not well understood, but studies suggest that factors internal to taxpayers such as social values may be key drivers of compliance (IRS, 2009). Increasing efforts on the part of agencies such as Her Majesty's Revenue and Customs (HMRC) and the United States Internal Revenue Service (IRS) are focusing on research exploring the consumer perspective, including the importance of these behavioural factors.

Charitable giving. Della Vigna et al. (2010) study the relative roles of social pressure and altruism in the context of charitable giving. They find that early notification about a door-to-door fundraising drive and the provision of a "do not disturb" option results in a significant reduction of household willingness to entertain fundraisers and the amount of donations respectively, and conclude that social pressure is an important determinant of charitable giving.

Non-standard beliefs

Overconfidence and over-optimism

Two aspects of overconfidence are particularly relevant to household finance: overconfidence about one's own inherent ability and over-optimism about the environment. In the first case, we observe that individual self-assessment generally tends towards overestimation about ones own abilities. A classic demonstration comes from Svenson (1981), who finds that when asked to rate their own skills, 80% of all drivers consider themselves in the top 30% of the population. Many financial literacy surveys, as discussed previously, display this trend towards overconfidence. DellaVigna and Malmendier (2004, 2006) show that consumers who are overconfident about their ability to maintain certain behaviours may be more susceptible to exploitation. In the second case, individuals also tend to be overconfident about their environment. In particular, they tend to consistently underestimate the probability of negative events across multiple domains (e.g. natural disasters, hospitalisation or falls in stock prices (Barberis and

Thaler, 2003)) Both types of overconfidence can lead to excessive risk-taking or other mistaken decisions (Camerer and Lovo, 1996).

Overconfidence in ability to trade in the stock market. Investors may be overconfident in their own abilities, and hence tend to trade overly aggressively, which can eventually lead to portfolio losses (e.g. Odean, 1998; Barber and Odean 2001, Grinblatt 2009, Barber et al 2009). Notably, overconfidence in this setting is associated with gender: the Barber and Odean (2001) study found that, all else equal, men traded almost 50% more than women, driving up their transaction costs and lowering their returns. Recent data from the field provides some support for this finding: data on almost 3 million Vanguard investors shows that during the stock market crisis of 2008 and 2009, men were 10% more likely to abandon stocks than women (potentially implying that men were more likely to have taken losses and missed the market's initial rally) (Ameriks et al, 2009).

Overconfidence in employers and advisors. Overconfidence about the abilities or motives of others can also be detrimental. For instance, when investing as individuals, Benartzi, Thaler, Utkus and Sunstein (2007) show that employees tend to be overconfident about the performance of their employer, which can lead them to hold a large percentage of savings in their employer's stock or stock options which has negative implications for overall household risk diversification (Oyer and Schaefer 2005, Cowgill et al., 2008). Malmendier and Shanthikumar (2007) show that small investors are more naive about incentives than large institutional investors: they tend to respond literally to security analyst recommendations, while large investors tend to discount stock recommendations from potentially biased sources.

Overoptimism about insurance needs. Research shows that in many countries, homeowners are not sufficiently against disaster risk. In addition to underestimating the probability of such events, households often underestimate damages caused or needs for resources stemming from potential disasters and thus their coverage needs, in particular, those related to large-scale catastrophes or ageing risks. This is often compounded by a general but potentially unfounded conviction that other entities such as the Government already covers the risk or will eventually cover damages (for example, in the event of natural disasters or terrorist attacks) – the so-called “Samaritan dilemma” (OECD, 2008).

Non-standard probabilistic thinking

Researchers in psychology and decision science have shown that individuals have difficulty formulating accurate beliefs about risk, particularly in the form of numerical probabilities. One common tendency is to overweight immediately-available information and to draw false conclusions about how accurately that information represents the underlying reality. *Availability* and *representativeness* heuristics can manifest in many ways. “*Gambler's fallacy*” is the belief that the next draw of a signal will be different from the previous one: for instance, roulette players may bet on red after observing a string of black squares come up; or individuals with two boy children may suppose that the next time, they are more likely to have a girl. In either case, however, the probability of either one of the two outcomes is equal and independent with every draw. The somewhat opposite manifestation is *over-inference* or the belief that a sequence of signals is likely to mean the next signal is of the same type.

Overinference about past stock returns. When investing in the stock market, naive investors may tend to place too much weight on past performance, consistent with the expectation that past high returns from an investment result in high future performance and vice versa. Multiple studies demonstrate that investors tend to over-extrapolate based on past performance (e.g., Benartzi, 1995; DeBondt and Thaler 1985). Overinferring the value of strong past performance of stocks can result in investment decisions in portfolios that perform worse than average because they are skewed towards

stocks that are overpriced and will therefore under-perform (De Bondt and Thaler 1985). While in some contexts past performance may be informative (such as actively-managed investment funds), Choi et al (2010) show that even when comparing essentially identical index funds, individuals are sensitive to information about past returns since inception.

Inappropriate insurance purchasing behaviour. Alternatively, individuals who do not observe certain events such as earthquakes or accidents may form unrealistically high expectations that such an event will not happen. On the other hand, when personally exposed to rare events, many individuals tend to then overestimate the probability of such an event happening. Insurance purchasing behaviour tends to display some of these biases. For example, the 9/11 attacks increased awareness of the risk of terrorism in OECD countries and of the need to develop adequate coverage, and sales of all types of protection insurance increased in the two years afterwards (OECD, 2008).

Over-participation in lotteries. Lotteries are attractive to many individuals who have a tendency to overweight small probabilities. The appeal of a potentially large expected future payoff in this case for a relatively small outlay can also be influenced by the combination of myopic decision making and the underweighting of small dollar amounts (Haisley et al., 2008a).

Non-standard decision-making

Although individuals may have preferences or beliefs that are consistent with the standard economic models, their observed behaviour may still diverge if their actual decision-making processes depart considerably from rational utility maximisation.

Limited Attention

One important hypothesis is that attention itself may be a scarce resource: individuals fundamentally may not have the cognitive capacity to process all the information in their environment simultaneously. Limited attention can lead to decision making that is disproportionately affected by the saliency and recency of information and stimuli. Limited attention can also affect the selective filtering of information, due to confirmatory bias, or the tendency to gather and retain information that reinforces already-held priors (Mullainathan and Shleifer, 2005). It implies that individuals compensate for their processing constraints by adopting simplifying heuristics or cognitive “rules of thumb” for managing complex information or problems.

Limited attention also means that providing helpful information to consumers is not always straightforward: when the limits of cognitive capacity are reached, individuals may be susceptible to information overload. Too much information in this case may lead to a worsening of cognitive performance on specific tasks and feelings of stress. Finally, in the extreme case when individuals are faced with a choice that is perceived as too complicated, they may simply default to choice avoidance, or the decision to refrain from choosing any option at all. In other words, too much information, too many choices or a badly designed choice architecture may thwart choice altogether.

Limited Awareness of Financial Product Fees and Expenses. The average consumer of financial products reports being unfamiliar with fees and expenses, even with respect to his or her own portfolio (Dominitz, Hung and Yoong, 2009). However, over the long-term, even small fees can significantly erode long-term value. Barber, Odean and Zheng (2005) find that mutual fund purchases are sensitive to salient fees, such as front-end loads and brokerage commissions but are insensitive to less salient charges such as expense ratios. The saliency effect also plays a role in credit card fee payments (Agarwal et al. 2008).

Some credit card users do in fact learn to lower their fees the longer they own credit cards, but this effect is offset by the tendency to forget fees. A late payment charge from the previous month is much more influential than the same payment from one year prior.

Limited Awareness of Taxes. The National Tax Advocate Annual Report 2009 for the United States notes that the complexity of the United States tax code is the most serious problem facing taxpayers and the United States Internal Revenue Service (IRS) alike. U.S. taxpayers and businesses spend about 7.6 billion hours a year complying with the filing requirements of the Internal Revenue Code, effectively making the “tax industry” one of the largest industries in the United States (IRS, 2009). Ignorance of the correct tax implications of their economic activities or confusion regarding tax returns may result in suboptimal withholding and investments, and delays or avoidance of filing altogether. As a further result of this complexity, many individuals may not be sensitive to tax incentives and penalties when making financial decisions. Barber and Odean (2004) find that while investors do show some response to tax incentives, many investors fail to employ fully tax-optimal strategies. Similarly, Chetty et al (2009) show that in the context of sales taxes, consumers are not usually attentive to non-salient taxation: firstly, posting tax-inclusive price tags reduces demand and secondly, taxes included in posted prices reduce demand more than taxes applied at the point of purchase.

Limited Investor Attention in the Stock Markets. Barber and Odean (2008) show that investors are net buyers of salient companies; investors prefer companies that performed unusually well or poorly on the previous day. Hirshleifer, Lim and Teoh(2009) show that incorporation of financial news slows when more news is available, while Della Vigna and Pollet(2007) show that investors do not take into account the impact of long-term demographic changes when making their decisions.

Menu Effects in Investment Choices are many examples of menu effects - systematic behaviours when individuals are presented with a list of choices - arise when choosing investments such as those offered by a typical retirement savings plan or a regular mutual fund company. One of the most well-known examples is the “1/n heuristic” described by Benartzi and Thaler (2001), which results in the naive diversification of portfolios. If investors are offered n choices, then they tend to allocate 1/n of their investment to each of the choices offered, independent of the risk characteristics of each option. Even when more sophisticated investors choose a subset of the menu of investment options, they tend to apply a conditional version of the rule and split their allocation evenly across that subset (Huberman and Jiang, 2006)

Investment Choice in Pension Plans. In DC plans, the breadth and flexibility of plan offerings is important to ensure that participants are able to meet their individual needs. However, while giving individuals more choices in theory improves their welfare, in practice the complexity of these choices can have adverse effects both on participation and investment allocations. Iyengar, Huberman and Jiang (2008) and Choi et al (2006) show that participation tends to drop as the number of plan options increases. Iyengar and Kamenica (2008) also show that increasing the number of options in a plan affects behaviour by causing investors to reallocate towards low-risk, simpler options.

Emotions and Affect

As Shiv et al (2003) point out the neural systems that drive human emotions have evolved for survival purposes, playing an adaptive role by speeding up decision-making in response to particular automatic triggers. These naturally-occurring responses may be helpful in short-term situations where quick responses are necessary or disruptive when longer-term perspectives should prevail. Emotion can thus have both positive and negative effects on decision-making, depending on the context.

In the domain of financial decisions, specifically, seminal work by Loewenstein and co-authors shows that the emotional state matters: individuals in a “hot” emotional state tend to respond more viscerally. The nature of emotional disposition also matters: not only do people in good moods make overly optimistic judgments (and conversely. Individuals often find it hard to forecast their behaviour in different emotional states (see e.g. Loewenstein 1996; Rick 1998; Loewenstein and Lerner 2003; Loewenstein and Rick, 2010)) and may also suffer from projection bias, systematically expecting their future preferences to be too close to their present ones (Loewenstein et al, 2003). Finally, emotional/affective reaction matters. Ackert et al (2003) suggests that affective assessments should be thought of as cognitive representations of specific positive or negative states linked to a particular stimulus by previous experience, and therefore, naturally, individuals are attracted to stimuli that give rise to positive affective reactions. In both these cases, framing and marketing techniques can also play a role in provoking emotional responses.

Preference for the familiar (home bias) in investments. Across countries, investors tend to allocate a large percent of their assets to domestic equities (French and Poterba 1991), although this may leave them under diversified. While this may reflect high costs of acquiring information, another interpretation is that this phenomenon may be rooted in preference for the familiar.

Advertising content for financial products. Bertrand et al. (2009) analyze the impact of marketing techniques in a mail-order campaign targeting prospective loan customers of a large bank in South Africa. They find that the effect of advertising is large, even relative to price effects. Advertising content is more effective when it triggers an “intuitive” response (e.g. the use of appealing photographs of female models, which changes the behaviour of men, but tellingly, not women) rather than a “deliberative” response (e.g. concrete suggestions for the use of loan proceeds).

4. Applying behavioural economics to financial education

Many of these biases are highly robust across not only the realm of personal finance, but all aspects of individual decision-making. This underscores the difficulty of changing consumer behaviour, even when financial education interventions are able to improve levels of knowledge and motivation. However, the findings of this body of research to financial education can yield insights about how to translate programmes into practice (some of which in fact reflect closely the common-sense of policy makers and practitioners used to working with ground realities rather than the assumptions of economic theory).

Take-up and completion

Voluntary participation in financial education programmes is often hard to achieve. Even after participants are enrolled, many programmes see significant rates of attrition before completion. A further concern is that individuals who are most in need of these programmes may also be most likely to avoid taking up and completing programmes. For instance, those who are likely to procrastinate with respect to the rest of their financial lives may also procrastinate when it comes to obtaining financial education. Meier and Sprenger (2008) demonstrate that in fact, present-biased individuals have more pathological financial behaviour, but are also least likely to sign up for financial education programmes. Naive time-inconsistent consumers may also likewise sign up for financial education programmes, but fail to attend regularly. Individuals with limited attention may also not perceive the need for financial education as salient or immediate, particularly when competing with other pressures in their daily life. Overconfident or over-optimistic consumers may believe that they are less in need of financial education than is actually the case. On the other hand, consumers who are less financially-literate and anticipate the unpleasantness of information overload may deliberately avoid financial education. Finally, individuals

who are excluded from the financial mainstream for social or cultural reasons may also selectively opt-out from participation.

Behavioural economics suggests that programmes should design their enrolment mechanisms to take into account present-bias and time-inconsistency, and to reinforce individuals' own commitment to long-term goals of financial well-being. Research on building participation in retirement savings plans has much to offer in this regard. When consumers are present-biased, reducing the monetary and transactions costs of enrolment and participation is extremely important. Paperwork should be minimised, and materials and classes should be offered in formats and locations that are easy to access. In some settings (such as in the workplace), it may be possible to exploit inertia by using defaults: participants could elect to opt-out rather than opt-in to financial education programmes. Present-biased individuals may also disproportionately respond to relatively small, highly-salient cash-incentives or service discounts conditional on enrolment and/or successful completion. To aid hyperbolic individuals, commitment devices could be employed: enrolment could be offered in advance, with a penalty for eventual noncompliance (such as a financial deposit to be returned at the end of the programme).

Marketing and presentation matter. Financial education programmes should increase their saliency and relevance to their target consumers, taking into account variation in preferences, limited attention and emotional responses. Programme "look-and-feel", the vividness of promotional materials and the general framing of the intervention itself are integral parts of the overall marketing strategy, all of which should be designed with the likely target audience in mind. Decisions about marketing and framing for a specific group should not be underestimated, as consumer responses to the same material may vary significantly. For instance, younger individuals may be more present-biased, and hence material targeted at the young may need to emphasise the immediate benefits of financial education. Alternatively, loss-averse consumers may respond more strongly to loss-framed material that highlights the negative consequences of financial mistakes. On the other hand, if such consequences are too starkly portrayed, consumers with strong negative emotional responses may avoid participation.

Timing is also key: programmes should exploit opportunities to offer education when the context is especially salient (Rabin, 1998): "teachable moments" just prior to making key financial decisions, recurrent events such as tax deadlines (April 15 in the United States), or periods such as the current financial crisis.

Programmes should take into account the fact that consumers may not have rational perceptions of their own need for financial education, or how much they stand to benefit. With overly-confident consumers, some form of initial debiasing may increase take-up, for example, by offering a short quiz, followed by the offer of financial education. Consumers with low confidence may respond better to marketing that emphasises self-efficacy and a "can-do" message, as well as the reassurance that financial education is within their reach. In general, programmes that are able to advertise tangible, quantifiable benefits to participants may find more willing participants.

Finally, appealing to social preferences and peer effects may increase the appeal and take-up of programmes. If substantially high, programmes could make known the number of individuals taking part as a fraction of the target consumer's demographic group, in an effort to build or reinforce social norms. Programmes can also leverage social networking to increase visibility among a particular target audience, by more traditional means such as offering incentives to "refer a friend" or where possible, using newer options such as setting up groups on networking sites such as Facebook.

Content, delivery and knowledge retention

Successfully managing to induce participation is only the first step. Participants in financial education programmes may not internalise the information provided for many reasons. Some may be enrolled for other motives other than education and lack any intention to actually learn the material. In other cases, mandatory participation may be the norm, for instance in schools or as a pre-condition for receiving other financial benefits. However, when individuals are enrolled in a programme by fiat, they may perceive education as intrusive and discount the information received (Hung and Yoong, 2010). Even when participation is voluntary, if programme material is inappropriate, consumers may not engage with the subject, or could even respond counterproductively. For instance, low-income immigrants may have very different financial access, economic relationships and social preferences from the general population. Linguistic and cultural barriers may prevail: they may find financial discussions about irrelevant topics of no use at best or, worse still, alienating. In another instance, individuals who are more sophisticated may perceive overly simple material as boring and are likely to become inattentive and overconfident. On the other hand, those who fail to grasp overly advanced material may find their confidence further eroded.

Financial education that fails to actually educate is thus costly for both the provider and the consumer, and may be worse than no financial education at all. While developing the fundamentals of an appropriate financial education programme is best left to experts in theory and practice of education, behavioural economics may still add new perspectives to the debate.

When participants have limited attention, programmes are most likely to be successful if they have a narrow scope, or focus on conveying a limited number of key facts or concepts. If overall programme goals are very ambitious, education may need to be delivered via a series of small or even repetitive interventions rather than a sweeping one-time interaction to increase retention and avoid information overload. Alternatively, programmes may take a strategic approach, teaching participants only basic facts and concepts while also educating them about how to seek out further information, rather than attempt to present too much material all at once. Resources (print, online or other) should be provided after the programme is formally concluded, so participants can easily refer to them for specific details if forgotten. Such materials should summarise key information in a format that is easily accessible and prompts recall, such as easy checklists.

This also suggests that individual programmes need to set clear priorities by determining their intended audience and recognising their needs and preferences in order to be selective. As with marketing material, course material should be as salient and relevant to the target audience as possible. Targeting a specific audience applies to content, but also to form. Material should be provided in the appropriate language and at the appropriate grade level. Facts and concepts could be linked to concrete examples based on the experiences of the target audience. The material should be made vivid in creative ways (see for instance, the use of video testimonials from relatable individuals by Lusardi et al. (2009) or by the New Zealand Retirement Commission at www.sorted.org.nz). The overall “look and feel” of the programme should convey an appealing underlying theme and employ frames and non-rational cues that reinforce learning appropriate to the target audience. For example, a significant body of research suggests that gender has an important differentiating role to play in financial decision making: women have different preferences, show different investment behaviour and respond differently to framing of choices (e.g. see Croson and Gneezy (2009), or Barber and Odean(1998)) Age can also be an important example: older populations have very different financial needs and concerns, but also experience changes in cognitive ability and an increased role of affect in decision making (Agarwal et al, 2007)). As such, programme managers should not only address content related to later stages of life, but also be sensitive

to the role that emotional framing may play in the presentation of material, for instance by providing education about annuities using positive emotional triggers.

It should also be noted that while targeting is crucial, it should also be handled with care and delicacy, and avoid the use of overtly negative or stigmatising stereotypes. Appealing to individuals in the form in which they feel most control and self-respect can be particularly important. For instance, simply being referred to as the poor may cause lower-income individuals to reject a programme altogether (Ross and Nisbett, 1991).

Furthermore, depending on cost and feasibility, in addition to recruiting and content aimed at the broadly-defined target audience, programmes with sufficient resources may further benefit from gathering more information about individual participants in order to assign more personalised instruction. Braunstein and Welch (2002) suggest using credit score records and other demographic information to develop education materials specific to the needs and difficulties of each individual. Alternatively short, simple diagnostic tools could be used to collect basic data about financial experience, subjective preferences and knowledge, as well as tests for common psychological biases. Individuals could be presented with default course content based on their individual characteristics, with the option to pursue information with different content or at a different level if desired.

More directly, insights from behavioural economics may also be the subject of financial education. Financial education could focus on making consumers self-aware of potential biases and intuitive but misleading heuristics that affect their financial decisions. For example, consumers may benefit from demonstrations of how intuitive responses about growth using simple interest diverge from compound interest calculations. Investors could be educated about how myopic loss aversion can lead to overly hasty withdrawals from risky assets followed by a failure to buy back in and the lock-in of large losses, or how naively implementing the “1/n rule” in their portfolios may lead to naive diversification. To increase relevance as well as saliency, diagnostic tools could also be applied to directly demonstrate individual biases. For instance, individuals could take a simple test that measures discount rates at different points in time to estimate their own personal tendency towards time-inconsistency, followed by the teaching of specific strategies to overcome these problems

At the same time, recognising that individuals have a real need to simplify their financial environment, financial education should aim to help consumers do so in the right way, for instance by teaching proven rules-of-thumb or problem-solving strategies. For instance, to understand compound interest, consumers could be taught the “Rule of 72”, which provides a reasonable approximation for the time taken for an investment to double by taking $72/(\text{interest rate})$.

Special attention should be paid to numeracy and probability, given that even highly-educated individuals have consistent and predictable problems with numerical risk formats and correct probabilistic thinking. In many contexts, it may be appropriate to use verbal or visual representations rather than percentages.

Apart from audience and content, planners need to consider the context for the delivery of financial education and the need to provide education in a supportive environment. Rabin (1998) suggests that financial education may work better in a context where people are cognitively prepared e.g. work or school. Tufano and Schnieder (2008) note that for most Americans, the primary source of funds comes from employment and a number of saving options aim to divert funds at this source. This makes the workplace the most substantively relevant as well as psychologically salient place for financial education.

As discussed previously, timing also matters: individuals may also be more receptive to learning during specific teachable moments.

Social preferences and networks can also play an important role in generating a supportive environment. While some interventions may be best delivered anonymously or via mass-media, more intensive education may be best conducted through personal contact with instructors or small-group formats. Small peer groups or individual instruction may be particularly effective in situations where financial matters are considered highly private, where stigma from poor financial literacy or economic hardship is an issue, or where large group dynamics can override the needs of minorities. Discussion among peers and testimonials about success or failure can be invaluable in making problems and solutions more salient and relevant to participants.

In addition, Duflo and Saez (2003) show that word-of-mouth can disseminate education informally across social networks even outside the purview of regular programme activities. Programmes should be aware of these opportunities and if possible, provide additional resources (such as print or online material) for individuals to help ensure that information is correctly transmitted without distortion.

Achieving and sustaining positive behavioural change

Even when participant knowledge is improved, programmes that do not ultimately change behaviour on a significant scale may not be deemed successful. Typically, participants declare their intent to change their behaviour, but only a minimal fraction actually follow through.

One way to increase the likelihood of behavioural change is to link financial education to concrete actions as far as possible. If participants tend towards procrastination, programmes could be connected to immediate decision making. For instance, when studying a financial access initiative, researchers found a large positive effect of having a bank representative who could complete most of the necessary paperwork to open an account present during a financial education event (Bertrand, Mullainathan and Shafir, 2006). Similar interventions could include facilitating enrolment in 401(k) plans or direct deposit to increase savings at the end of financial education sessions. It should be noted, however, that since the concept of bundling education together with an enabling action may be quite powerful, such strategies should be carefully vetted prior to implementation in order to avoid inducing conflicts of interest or other such problems.

In order to avoid feelings of being overwhelmed, desirable outcomes could be broken down into small intermediate steps. To increase saliency, participants could be provided with regular reminders, tools to track and visualise individual progress, such as progressive checklists (with approximate times for completion) or periodic measures of how much they have gained as a result of the programme to date (e.g. additional savings, reductions in debt etc).

Programmes could also suggest or actively train participants to use tools that help them to act on their new knowledge. Very simple decision support could include things as basic as a list of “behavioural warning signs” to look out for before making decisions. Individuals who are self-aware of their likelihood for procrastination could be educated about the availability of commitment devices or taught to create commitment devices for themselves, while those who are more susceptible to overconfidence or emotions could be taught to impose cooling-off periods upon themselves before actually following through on a decision.

More directly, programmes could implement commitment devices to ensure that participants follow up. For instance, after completion, participants could be required to make statements of intended behavioural change and their progress could then be tracked. While clearly requiring additional resources, the cost of such follow-up interventions has fallen significantly with technology, as it is now possible to automate email reminders and calendar notifications, provide online tools for data logging and visualisation, and generate automatic feedback in response to participants. While this may not be possible or cost-effective in countries where Internet or computer access is limited, other channels such as the use of cell phone text messaging could also be explored as alternative ways to extend post-programme support.

Social pressure and peer effects could also be used as commitment devices of this type to sustain behavioural change. Actual group meetings to monitor and encourage progress may be most useful, particularly in settings where community norms are important. Where in-person meetings are less feasible, programmes could also facilitate peer-to-peer discussions through other means such as providing online forums for discussion and support. Alternatively, less direct methods could be applied, such as disseminating information to participants on an ongoing basis about group-level success in changing behaviour, testimonials and success stories.

5. Behaviourally-motivated approaches to other policy instruments

Market failures arise even in the standard economic model, requiring policy makers to play an active role in the provision of public goods and services and in regulation of market participants. However, deviations from the model increase the complexity of designing policies for consumer protection, not only because consumers themselves are likely to act in ways contrary to their own self-interest, but also because such consumers interact with firms that respond to their psychological biases within specific market settings (Barr et al, 2008). Helping individuals overcome biases in order to create a financially-healthy consumer base may sometimes be in firms' best interests (for instance, banks may wish to promote savings and the opening of new accounts). However, as profit-maximising entities, they will fail to do so or to even exploit the same biases when that is no longer the case (for instance, the same banks may seek to encourage over-borrowing by the same consumers). The key observation is that the appropriate nature of any policy intervention may arise not from biases themselves, but from the way that biases ultimately affect market incentives.

In the following discussion we explore several ways in which practitioners and policy makers have drawn on behavioural economics to provide financial goods and services aimed at helping consumers make better choices. Conversely, we also explore some aspects of regulation motivated by behavioural economics where the policy maker's objective is to protect consumers from firms' indifference or deliberate manipulation.

Designing products and environments that encourage better choices

As behavioural economics has gained in popularity, many innovations in programme and product design have been developed to compensate for or even leverage known cognitive biases. Below we examine a number of well-known examples.

Simplifying financial decision making in both private and public spheres. A first principle is to design choice environments that account for limited attention and potential information overload. For instance, Iyengar et al. (2004) suggest that participation in private pension plans may be boosted by offering only a handful of carefully-selected funds, as compared to plans offering a bewildering array of

options. Choi, Laibson, and Madrian (2006) propose the use of Quick Enrolment a mechanism which simplifies enrolment in employer-sponsored retirement plans by giving individuals the option to enrol at a pre-selected contribution rate and asset allocation.

More generally speaking, practitioners and policy makers should both be sensitive to the need for simplicity in structure and documentation. As related earlier, this is true of many aspects of tax preparation. In the United States, this has led to the development of a simpler alternative “EZ” federal tax form for qualifying individuals and other initiatives by the IRS (IRS, 2009). In a related example, the United States is also launching a simplified, online federal student-loan application that allows students to fill in income data from information the IRS has on file from tax returns with the click of a mouse, which is projected to increase student loan applications considerably (Camerer et al, 2003). In addition, several private sector and non-profit entities also offer tax preparation advice and software tools that simplify taxes for the individual filer, breaking up the process into smaller step-by-step tasks.

Defaults that encourage positive outcomes. As previously alluded to, defaults can be set to achieve desired outcomes by exploiting status-quo bias, particularly in the case of retirement savings plans. A typical example is switching the default option for employee savings plans from non-enrolment to enrolment at a default contribution rate (while allowing the individual to opt-out if desired). Changing the default to enrolment (with opt-out) dramatically increases participation, with results across different firms and countries often in the range of 80-90%. Beshears et al (2006) demonstrate that defaults have a strong impact on retirement savings outcomes at all stages of the savings lifecycle, including savings plan participation, savings rates, asset allocation, and post-retirement savings distributions. With respect to investment allocations, in some countries, like the United States, plan fiduciaries are increasingly selecting life-cycle funds as the most appropriate default option. This is also the most common default choice in the Latin American region (including pension systems in Chile, Mexico and Peru) where individuals who do not make an active investment choice are allocated to the provider’s different funds according to age (OECD, 2008)

Commitment devices. Other designs address time-inconsistency using voluntary commitment devices. For instance, to encourage savings, commitment savings products have been designed that impose withdrawal restrictions or require savings commitments. In the first case, product rules restrict participant access to funds for a particular period of time or until a specific goal is met. Tufano and Schneider (2008) note that these withdrawal commitments can take many forms, such as the requirement for bank officer signoff for saving withdrawals, term deposits in banks with early withdrawal penalties, tax advantaged programmes that have withdrawal penalties, or private equity investments with limited opportunities for exit. Ashraf et al (2003) show that there can be significant demand for such products from consumers who have self-control problems but are aware of their own biases. It should be noted that desire for commitment devices is not incompatible with a desire for contingent liquidity or emergency withdrawals and that some exemptions of this type may also be added to increase their appeal (for instance, the ability to borrow against 401(k) plan balances in times of hardship).

An example of savings commitments, on the other hand, is Save More Tomorrow, a product developed by Thaler and Benartzi (2004). Participants are offered the option to participate in their retirement savings plan at a low initial contribution rate that automatically increases their plan contributions up to the maximum in later pay periods. Participants essentially commit to allocate a substantial part of their future pay raises to savings, a design that helps overcome loss-aversion by pushing perceived sacrifices into the future while taking advantage of inertia to ensure that the savings are realised. In their evaluation, Thaler and Benartzi (2004) found that Save More Tomorrow not only

successfully increased average savings for participants but was also extremely popular, with high voluntary participation and retention rates.

Such product features can similarly be used to address the problem of debt reduction: individuals with large outstanding debts may benefit from voluntary commitment devices that force them to pay down balances or cap their ability to borrow below their actual credit limit.

Lottery incentives. Lotteries can be used to incentivise positive behaviour - a natural application is to make savings more attractive by adding lotteries that give savers the chance to win prizes allocated randomly (potentially at the cost of interest reductions relative to market rates). Haisley et al.(2008b) show that low income populations disproportionately play state lotteries, making such interventions potentially promising in addressing issues related to financial inclusion. While regulations against gambling have prevented widespread adoption of this design (particularly in the United States), Tufano and Schneider (2008) point out that lotteries have in fact been used to promote savings and investment for centuries. A contemporary example is the United Kingdom's Premium Bonds, which award random prizes as part of the savings product's return with drawings held monthly and roughly 1.2 million prizes distributed at each drawing. Private financial institutions have also marketed prize-linked savings products with success internationally, including in Kenya, Mexico, Venezuela, Columbia, Japan and South Africa.

Using mental accounting to build savings. As noted previously, individuals tend to regard tax-refund dollars as particularly "saveable". Prior to 2007, the IRS required that all refund dollars be sent in a single check or deposit, without allowing filers to earmark a portion for saving. To help individuals act on their predisposition to save refund money, several non-profit and private-sector entities such as professional tax-preparers launched initiatives to leverage the opportunity provided by tax deadlines. These including using the prospect of future refunds to motivate unbanked filers to open savings accounts, as well as reinforcing mental accounting with voluntary commitment devices by giving individuals the option to divert funds to savings months or weeks before refund receipt. Starting in January 2007, the IRS began to allow multiple destinations for refunds with its introduction of Form 8888, a policy change that has significantly lowered the costs of facilitating such programmes (Tufano and Schneider, 2008).

Leveraging social networks. One example of using social networks to reinforce positive behaviour is the America Saves! Campaign in the United States, which uses a traditional model of using peer groups to encourage savings. Begun in 2001, the programme aims to encourage people to save by setting up city-wide savings campaigns around providing education and encouragement. Enrolees make a savings plan and pledge to meet their savings goals, supported by various resources including print media, one-on-one meetings, and savers club. In Cleveland, the first adopter, about one-third of participants were poor and non-white, and those who participated in savings clubs were far more likely to report making progress on their savings goals. (Cude and Cai, 2006, as cited in Tufano and Schneider 2008). With increasing Internet penetration, programmes have evolved to embrace online communities via websites, blogs and social networking platforms. Other examples include wesabe.com, a website that combines online money-management tools with a live community of users who contribute ideas and advice to one another, and networthiq.com, a website that allows users to post their own net-worth and benchmark their savings progress with that of the entire community.

Policy makers can promote the adoption of these design principles by aligning the interests of firms with consumers using tax and other incentives, and actively disseminating best-practices among private organisations. For instance, Barr et al (2008) propose giving pay-for-performance tax-credits to banks that offer low-income accounts with some of the features mentioned above. Various initiatives (including that

of the OECD and others) are currently aimed at creating common benchmarks and best practices in this area. Kahneman and Riepe (1998) and Benartzi (2010), for example, provide simple checklists for financial advisors and financial services providers, which could be emulated and disseminated for the use of interested firms.

Regulation for consumer protection

Using behavioural economics to improve disclosure

The potential for firms to exploit the limited attention of consumers gives policy makers a strong rationale to ensure that consumers receive better disclosures. Gabaix and Laibson (2006) demonstrate that firms tend to shroud attributes of their products to extract more profits. Even in the absence of deliberate shrouding, consumers show a robust insensitivity to the features and fees associated with financial products of all types (Dominitz et al, 2008).

However, evidence on the impact of existing consumer and investment disclosures is very mixed. Evidence from the United States Federal Trade Commission (2004) showed that disclosing compensation for mortgage brokers would harm consumers, as they increased confusion and resulted in borrowers choosing more expensive loans by mistake. Similarly, the United Kingdom's Better Regulation Executive (BRE, 2008) found that consumer credit agreements not only failed to impart information, but the length and complexity also effectively alienated consumers from all backgrounds. In the context of investment disclosures, Choi, Laibson and Madrian (2010) show that presenting potential investors with a one-page summary sheet which explains charges and showed how to calculate the impact of fees on portfolio value had only modest positive effects on altering portfolio allocations. Beshears et al. (2009) compared individuals' performance using newly-adopted Summary Prospectuses from the United States Securities and Exchange Commission against standard prospectuses and find that while simplified disclosure significantly improved satisfaction and reduced time on task, actual choices were not much affected. As the BRE report points out, disclosure regulations that are not effective may have a negative overall welfare effect, as they are costly to implement and oversee, burdensome for firms and ultimately appear to leave consumer behaviour unchanged.

Behavioural research suggests several avenues for improving disclosure. Firstly, given consumers limited attention, the principle that "more is better" should be carefully reconsidered. Disclosure presentations should emphasise the saliency of key facts. When comparisons are needed, appropriate use of graphics and tables should be made and standardised information formats for all firms in a given industry should be provided to avoid marketing biases.

In particular, policy makers should mandate the highlighting of particular information that is likely to be underweighted by consumers or shrouded by firms e.g. the true probability of insurance losses or fees for mutual fund purchases. For instance, Camerer et al (2003) propose that state lotteries could be required to post prominent information about the odds and payoffs of the gamble, and that given biases in interpreting small probabilities, it may help to use graphical devices, metaphors or relative-odds comparisons (e.g. winning the lottery is about as likely as being struck by lightning in the next week). In another example, some OECD countries mandate that purchasers of life insurance be provided with a short summary information note of the product summarising its most important features in a clear format. A number of countries also stress the provision of pre-contract and renewal information in clear non-technical language and in large print. Spain has also developed specific regulations regarding the sale of contracts over the internet to heighten awareness of the possibilities for cancellation of the policy (OECD, 2008).

Framing may also be creatively used. For instance, from 2010, credit card disclosures in the United States will present consumers with the minimum payment needed each month to pay off their balances within three years, and how long it would take to be debt-free if only minimum payments are made. In another example, some retirement savings plan statements from financial service providers in the United States show participants their balances as well as projected future income streams. However, this example is illustrative of an additional complexity: in such cases, it is important and often difficult to ensure that consumers also understand the impact of assumptions that are necessarily made in order to generate these projections. To address heterogeneity in consumer needs and prevent information overload while preserving content, another approach is tiered disclosure, which combines simplification of standard forms with directions on how to obtain more information for more sophisticated consumers.

Finally, mechanisms could be put in place to increase the likelihood that consumers have read and understood disclosures, in addition to the common practice of requiring consumers to affirm that they have done so. For instance, consumers could be required to physically enter the interest rate they will be paying on their credit card applications in addition to their signatures.

Product/programme restrictions based on behavioural economics

A more paternalistic direction is to go beyond incentivising desirable programmes and product features by making them mandatory, or on the other hand, limiting perverse product features or deliberate manipulation of consumer biases by law.

Compulsory auto-enrolment. The United States' currently-proposed Automatic IRA is intended to address the problem of individuals without retirement savings plans by imposing a mandatory auto-enrolment programme on employers. In brief, the proposal requires all but the smallest firms to automatically enrol their employees into tax-advantaged individual retirement accounts (IRAs) if they do not offer their own retirement plans, with a minimum of 3% of pre-tax earnings to be direct-deposited into these accounts. While the IRAs would be held at private-sector financial service providers, the default allocation would be held in a statutorily-determined low-cost investment option, and other investment alternatives would also be statutorily-prescribed. Under this plan, employees retain the option to opt-out, increase their allocations or change their investments.

Restricting the use of perverse defaults. In this respect, the European Commission has already drawn on behavioural economics by incorporating new language into the recent proposal for a Consumer Rights Directive that mandates the use of appropriate defaults. This proposal includes a specific provision stating that “the trader shall seek the express consent of the consumer to any payment in addition to the remuneration foreseen for the trader's main contractual obligation”. This provision directly addresses the concern that consumers are more likely to overlook and accept a fee if they are asked to opt-out rather than to opt-in.

Another example relates to offers that allow individuals to sign up for a particular good or service for free during a “trial” period, subject to active cancellation. Such “trials” often cause procrastination-prone individuals to become locked into long-term contracts. Regulators could mandate that these deals are automatically terminated at the end of the trial period, instead of defaulting to a long-term contract.

Requiring debiasing feedback for consumers. Paying for commitment devices may be attractive and helpful to sophisticated individuals with self-control problems. However, Malmendier and Della Vigna (2004,2006) show that when consumers are also overconfident about their ability to comply with their commitments, contracts with such devices can become exploitative, inducing upfront overpayment that

is ex-post suboptimal. Overconfidence cannot usually be observed by the regulator, but forcing firms to allow individuals who do not ultimately comply to renege on their contracts defeats the purpose of the commitment device. However, regulators may be able to require firms to regularly report feedback to consumers on their performance over time to help debias consumers.

Requiring cooling-off periods. Camerer et al (2003) suggest mandated “cooling-off” periods for consumers when they undertake significant purchases or decisions, to make sure that people do not make bad decisions when in highly emotional states or when they are experiencing untoward social pressure. For example, in the United States, homebuyers are entitled a cooling-off period for home equity loans during which they have a limited right to rescind certain credit transactions.

Complementarities with financial education

Financial illiteracy and perverse behavioural biases are two related but distinct aspects of the same overall problem: poor household financial decision making. Many highly financially sophisticated consumers still suffer from biases such as overconfidence, are overly susceptible to social pressure and tend to procrastinate beyond what they know to be in their own best interests. Other individuals may not have the cognitive capacity to respond to financial education. It should also be noted that financial education is inherently a long-term endeavour that is not always suited to the delivery of short-term results. In such situations, the effect of financial education on behavioural change is naturally limited, and the consumer needs to rely on the use of appropriate products or the protection afforded by regulation.

However, the reverse is also true: other consumers may lack the information or skills to make decisions about unfamiliar products and services although they are perfectly rational in their preferences, beliefs and decision-making. In a most striking example, Guiso and Jappelli(2005) show that a large fraction of Italian households may not participate in the stock market for the simple reason that they are entirely unaware of the existence of stocks, mutual funds and investment accounts.

Furthermore, product design and regulation are themselves also inherently limited, especially when the determination of the “right choice” is not infallible. Many product features that manipulate individual psychology can be helpful or harmful depending on context. However, the context may not always be clear to regulators and may not always apply to all individuals equally. Implementing such policies with a heavy hand may not be ideal or feasible, particularly if the risk of causing more harm than good is high. Financial education can then act as a substitute or, if such policies are deemed necessary, as a complement to ensure that consumers who are placed at risk are able to protect themselves.

For instance, choosing optimal defaults is not always simple (Ayres, 1989). If the default is set inappropriately, individuals may follow the “wrong” default and simply moving from one suboptimal state to another. In the context of retirement savings plans, Choi et al (2004) find employees in one company improved participation under a default of auto-enrolment but also tended to maintain the default contribution rate as well. Since this rate was relatively low, this actually reduced modal contributions. Setting a uniform default is also problematic when the “right” option may vary by individual types, implying that certain individuals could be harmed even when some others gain. Customising defaults individually (such as setting age-specific default portfolios) may help, but may not always be feasible or possible, given that some determinants of the optimal default may not be observable. Less financially-literate workers are most vulnerable in a situation where the “right” default is ambiguous, as they tend to interpret defaults as advice (Madrian and Shea, 2001). An alternative to setting a default is to require active decisions about participation, but this design still fails to aid individuals who are not financially literate enough to make the appropriate choice (Carroll et al, 2008). In this case, financial education is a

critical part of ensuring the safe use of defaults, as financially-literate workers are more likely to appropriately exercise their right to opt-out if the default is not suitable.

Another example illustrates that highly paternalistic regulation may be more expensive to sustain, and ironically may also require more (rather than less) financial education. As individuals tend to underinsure themselves against mortality and morbidity risk, we may consider compulsory insurance. However, as pointed out in OECD (2008), in practice insurance policies in Canada, Italy and France require more information, regulation and supervision when participation is compulsory, in order to educate individuals about their obligation and to ensure that they choose coverage that is appropriate.

As a final consideration, bundling financial education with other products or programmes designed to change behaviour can increase the effectiveness of both. For instance, while making disclosure simpler and more standardised is critical, the use of improved forms could also be made more efficient by financial education that builds consumer familiarity with the specific form types. Conversely, conducting a financial education programme immediately prior to offering any type of product may increase the likelihood of product take-up. Finally, as previously noted, coupling financial education with a follow-up programme with some form of commitment device may make both interventions more likely to succeed.

Financial education and products and regulations that address behavioural biases may therefore be seen as a set of complementary tools, each of which has its natural strengths. These tools can be used as substitutes when necessary to overcome specific limitations, or in combination to enhance one another.

6. Conclusions

The evidence we have to date on financial education shows both successes and failures. While the importance and scope of financial education programmes have increased and continue to do so, many challenges remain with respect to take-up, retention and ultimately behaviour change.

Meanwhile, behavioural economics has captured the attention of policy makers as a potential tool for consumer protection. In 2007, the Australian Government Productivity Commission organised a Roundtable on Behavioural Economics and Public Policy (AGPC, 2008). A similar meeting to discuss behavioural economics was also held in the United States by the Federal Trade Commission in 2007. In 2008, the European Commission Director General for Health and Consumers convened a conference entitled “How Can Behavioural Economics Improve Policies Affecting Consumers?”

Simple strategies that draw on behavioural economics to improve financial education programmes include:

- Adapting administrative processes to counter present-bias and time-inconsistency, and reinforce commitment to long-term goals of financial well-being.
- Creating marketing materials and content for financial education programmes that are salient and relevant to the target consumer, taking into account variation in preferences, limited attention and emotional responses.
- Ensuring that the level of material is appropriate for the literacy and numeracy of the target audience, and that content is simple without being simplistic.

- Providing education at a time and in a context that supports cognitive preparation, such as in school and in the workplace.
- Developing and using appropriate diagnostic tools to help consumers recognise their own needs and biases, and teaching individuals strategies to help overcome the latter.
- Clearly communicating specific, concrete and actionable steps and linking the educational process to immediate action if possible.
- Reinforcing education with external decision support in the form of information resources and tools that are easy to find and use, potentially including commitment devices to motivate and sustain behavioural change.
- Recognising and working with social preferences to increase take-up, retention and follow-up, including in-person education, group interaction or social networking.

While behavioural economics gives us new insights into ways to maximise the impact of financial education, it simultaneously highlights other psychological and cognitive factors that can also ultimately act as binding constraints to change and therefore reminds us to be realistic about financial education itself. Used appropriately, behaviourally-motivated products and regulations can help compensate for the limitations of financial education. The reverse is also true: financial education supports and enhances the use of behaviourally-motivated products and regulations. These instruments can and should be regarded as complements when addressing the full spectrum of issues related to household financial decision making. Increasing the effectiveness of financial education thus remains a priority for policy makers and practitioners, and integrating future developments in behavioural economics into financial education is a key part of continuing to do so.

REFERENCES

- Australian Government Productivity Commission (2008), "Roundtable Proceedings, Behavioural Economics and Public Policy"
- Abadie, A. and S. Gay (2006). "The impact of presumed consent legislation on cadaveric organ donation: A cross-country study." *Journal of Health Economics* 25(4): 599-620.
- Ackert, L. F., B. K. Church, and R. Deaves. (2003). "Emotion and Financial Markets." *Federal Reserve Bank of Atlanta Economic Review*.
- Agarwal, S., J. C. Driscoll, X. Gabaix and D. Laibson (2007). "The Age of Reason: Financial Decisions Over the Lifecycle", working paper, National Bureau of Economic Research, Inc.
- Agnew, J. and L. R. Szykman (2004). "Asset Allocation And Information Overload: The Influence of Information Display, Asset Choice and Investor Experience", working paper Center for Retirement Research.
- Agnew, J. R., L. R. Anderson, J.H. Gerlach and L.R. Szykman, (2008). "Who Chooses Annuities? An Experimental Investigation of the Role of Gender, Framing, and Defaults." *American Economic Review* 98(2): 418-422.
- Ainslie, G. (1975). "Specious reward: A behavioural theory of impulsiveness and impulse control,." *Psychological Bulletin* 82(4): 463-449.
- Alpert, M. and H. Raiffa (1982). A progress report on the training of probability assessors. *Judgement under Uncertainty: Heuristics and Biases*, Cambridge University Press.
- Ameriks, J., J. Marshall and L. Ren (2009). "Equity abandonment in 2008-2009: Lower among balanced fund investors", Research Note, Vanguard.
- ANZ (2008) "ANZ Survey of Adult Financial Literacy in Australia"
- Ashraf, N., D. Karlan and W. Yin. (2006). "Tying Odysseus to the Mast: Evidence from a Commitment Savings Product in the Philippines." *The Quarterly Journal of Economics* 121(2): 635-672.
- Atkinson, A. S. McKay, E. Kempson and S. Collard (2006) "Levels of Financial Capability in the UK: Results of a baseline survey" Financial Services Authority, UK
- Ausubel, L. M. (1999). Adverse Selection in the Credit Card Market, Unpublished working paper.
- Ayres, I. and R. Gertner (1989). "Filling Gaps in Incomplete Contracts: An Economic Theory of Default Rule." *Yale Law Journal* 87: 91-95.

- Baker, M., J. Coval and J.C.Stein (2007). "Corporate financing decisions when investors take the path of least resistance." *Journal of Financial Economics* 84(2): 266-298.
- Barber, B. M., Y. Lee, Y. Liu and T. Odean (2009). "Just How Much Do Individual Investors Lose by Trading?" *Review of Financial Studies* 22(2): 609-632.
- Barber, B. M. and T. Odean (2001). "Boys Will Be Boys: Gender, Overconfidence, And Common Stock Investment." *The Quarterly Journal of Economics* 116(1): 261-292.
- Barber, B. M. and T. Odean (2004). "Are individual investors tax savvy? Evidence from retail and discount brokerage accounts." *Journal of Public Economics* 88(1-2): 419-442.
- Barber, B. M. and T. Odean (2008). "All That Glitters: The Effect of Attention and News on the Buying Behaviour of Individual and Institutional Investors." *Review of Financial Studies* 21(2): 785-818.
- Barber, B. M., T. Odean, and L. Zheng (2005). "Out of Sight, Out of Mind: The Effects of Expenses on Mutual Fund Flows." *Journal of Business* 78(6): 2095-2120.
- Barber, B. M., T. Odean and N. Zhu (2009). "Systematic noise." *Journal of Financial Markets* 12(4): 547-569.
- Barberis, N., M. Huang and T. Santos (2001). "Prospect Theory And Asset Prices." *The Quarterly Journal of Economics* 116(1): 1-53.
- Barberis, N., M. Huang and R.H. Thaler (2006). "Individual Preferences, Monetary Gambles, and Stock Market Participation: A Case for Narrow Framing." *American Economic Review* 96(4): 1069-1090.
- Barberis, N. and R. Thaler (2003). A survey of behavioural finance. *Handbook of the Economics of Finance*, Elsevier. 1: 1053-1128.
- Barr, M. S., S. Mullainathan and E. Shafir (2008). Behaviorally Informed Financial Services Regulation, New America Foundation.
- Bayer, P. J., B. D. Bernheim and J.K. Scholz (2009). "The Effects Of Financial Education In The Workplace: Evidence From A Survey Of Employers." *Economic Inquiry* 47(4): 605-624.
- Benartzi, S. (2001). "Excessive Extrapolation and the Allocation of 401(k) Accounts to Company Stock." *Journal of Finance* 56(5): 1747-1764.
- Benartzi, S. (2010). *Behavioural Finance and the Post-Retirement Crisis*, Discussion paper, Allianz.
- Benartzi, S. and R. Thaler (2007). "Heuristics and Biases in Retirement Savings Behaviour." *Journal of Economic Perspectives* 21(3): 81-104.
- Benartzi, S. and R. H. Thaler (1995). "Myopic Loss Aversion and the Equity Premium Puzzle." *The Quarterly Journal of Economics* 110(1): 73-92.
- Benartzi, S. and R. H. Thaler (2001). "Naïve Diversification Strategies in Defined Contribution Saving Plans." *American Economic Review* 91(1): 79-98.

- Benartzi, S. and R. H. Thaler (2002). "How Much Is Investor Autonomy Worth?" *Journal of Finance* 57(4): 1593-1616.
- Benartzi, S., R. H. Thaler, S.P. Utkus and C.R. Sunstein (2007). "The Law and Economics of Company Stock in 401(k) Plans." *Journal of Law & Economics* 50(1): 45-79.
- Benjamin, D. J., J. J. Choi and A.J. Strickland (forthcoming). "Social Identity and Preferences." *American Economic Review*.
- Bernheim, B. D. and D. M. Garrett (2003). "The effects of financial education in the workplace: evidence from a survey of households." *Journal of Public Economics* 87(7-8): 1487-1519.
- Bernheim, B. D., D. M. Garrett and D.M. Maki (2001). "Education and saving: The long-term effects of high school financial curriculum mandates." *Journal of Public Economics* 80(3): 435-465.
- Bertrand, M., D. Karlan, S. Mullainathan, E. Shafir and J. Zinman (2010). "What's Advertising Content Worth? Evidence from a Consumer Credit Marketing Field Experiment." *Quarterly Journal of Economics* 125(1): 263-305.
- Bertrand, M., S. Mullainathan and E. Shafir. (2006). "Behavioural Economics and Marketing in Aid of Decision Making among the Poor." *Journal of Public Policy and Marketing*, 25(1).
- Beshears, J., J. J. Choi, D.Laibson and B.C. Madrian (2006). "The Importance of Default Options for Retirement Saving Outcomes: Evidence from the United States". *Social Security Policy in a Changing Environment*, National Bureau of Economic Research, Inc.
- Beshears, J., J. J. Choi, D.Laibson and B.C. Madrian (2007). "The Impact of Employer Matching on Savings Plan Participation under Automatic Enrollment", working paper, National Bureau of Economic Research, Inc.
- Beshears, J., J. J. Choi, D.Laibson and B.C. Madrian (2009). "How Does Simplified Disclosure Affect Individuals' Mutual Fund Choices?", working paper, National Bureau of Economic Research, Inc."
- Better Regulation Executive and National Consumer Council (2008). "Warning: too much information can harm: A final report by the Better Regulation Executive and National Consumer Council on maximising the positive impact of regulated information for consumers and markets", available at <http://www.berr.gov.uk/files/file44588.pdf>
- Bikhchandani, S., D. Hirshleifer and I. Welch (1998). "Learning from the Behaviour of Others: Conformity, Fads, and Informational Cascades." *Journal of Economic Perspectives* 12(3): 151-170.
- Botti, S. and S. S. Iyengar (2006). "The Dark Side of Choice: When Choice Impairs Social Welfare." *Journal of Public Policy and Marketing*, 25(1).
- Braunstein, S. and C. Welch (2002). "Financial literacy: an overview of practice, research, and policy." *Federal Reserve Bulletin*: 445-457.
- Brown, J. R. (2007). Rational and Behavioural Perspectives on the Role of Annuities in Retirement Planning, National Bureau of Economic Research, Inc

- Brown, J. R., Z. Ivkovic, P.A. Smith and S. Weisbenner (2008). "Neighbors Matter: Causal Community Effects and Stock Market Participation." *Journal of Finance* 63(3): 1509-1531.
- Brown, J. R., J. R. Kling, S. Mullainathan and M.V. Wrobel (2008). "Why Don't People Insure Late-Life Consumption? A Framing Explanation of the Under-Annuitization Puzzle." *American Economic Review* 98(2): 304-309.
- Brown, J. R., N. Liang and S. Weisbenner (2007). "Individual account investment options and portfolio choice: Behavioural lessons from 401(k) plans." *Journal of Public Economics* 91(10): 1992-2013.
- Brown, Jeffrey (2008) "Financial Education and Annuities", OECD Consultant Report
- Bucks, B. and K. Pence (2008). "Do borrowers know their mortgage terms?" *Journal of Urban Economics* 64(2): 218-233.
- Camerer, C., S. Issacharoff, G. Loewenstein, T. O'Donoghue and M. Rabin (2003). "Regulation for Conservatives: Behavioural Economics and the Case for Asymmetric Paternalism." *University of Pennsylvania Law Review* 151(3): 1211-1254.
- Camerer, C., G. Loewenstein and D. Prelec (2005). "Neuroeconomics: How neuroscience can inform economics." *Journal of Economic Literature*. 43(1): 9-64.
- Camerer, C. and D. Lovallo (1999). "Overconfidence and Excess Entry: An Experimental Approach." *American Economic Review* 89(1): 306-318.
- Carroll, G. D., J. J. Choi, D. Laibson, B.C. Madrian and A. Metrick (2008). "Optimal Defaults and Active Decisions." *Quarterly Journal of Economics*.
- Cent1Q(2007) "Summary of financial insight among the Dutch"
- Chetty, R., A. Looney and K. Kroft (2009). "Salience and Taxation: Theory and Evidence." *American Economic Review* 99(4): 1145-1177.
- Choi, J., D. Laibson, and B.C. Madrian (2006). "Reducing the Complexity Costs of 401(k) Participation Through Quick Enrollment(TM)", working paper, National Bureau of Economic Research, Inc.
- Choi, J. J., D. Laibson, and B.C. Madrian. (2005). "\$100 Bills on the Sidewalk: Suboptimal Investment in 401(k) Plans", working paper, National Bureau of Economic Research, Inc.
- Choi, J. J., D. Laibson, and B.C. Madrian. (2009). "Mental Accounting in Portfolio Choice: Evidence from a Flypaper Effect." *American Economic Review*.
- Choi, J. J., D. Laibson, and B.C. Madrian. (forthcoming). "Why Does the Law of One Price Fail? An Experiment on Index Mutual Funds." *Review of Financial Studies*
- Choi, J. J., D. Laibson, B.C. Madrian and A. Metrick (2002). Defined Contribution Pensions: Plan Rules, Participant Choices, and the Path of Least Resistance. *Tax Policy and the Economy, Volume 16*, National Bureau of Economic Research, Inc: 67-114.

- Choi, J. J., D. Laibson, B.C. Madrian and A. Metrick (2003). "Optimal Defaults." *American Economic Review Papers and Proceedings* 93(2): 180-185.
- Choi, J. J., D. Laibson, B.C. Madrian and A. Metrick (2004). For Better or for Worse: Default Effects and 401(k) Savings Behaviour. *Perspectives on the Economics of Aging*, National Bureau of Economic Research, Inc: 81-126.
- Choi, J. J., D. Laibson and A. Metrick (2002). "How does the Internet affect trading? Evidence from investor behaviour in 401(k) plans." *Journal of Financial Economics* 64(3): 397-421.
- Clancy, M., M. Grinstein-Weiss and M. Schreiner (2001). Financial Education and Savings Outcomes in Individual Development Accounts, EconWPA.
- Clark, R. L., M. B. d'Ambrosio, A. McDermed and K. Sawant (2006). "Retirement plans and saving decisions: the role of information and education." *Journal of Pension Economics and Finance* 5(01): 45-67.
- Coval, J. D. and T. J. Moskowitz (2001). "The Geography of Investment: Informed Trading and Asset Prices." *Journal of Political Economy* 109(4): 811-841.
- Coval, J. D. and T. Shumway (2005). "Do Behavioural Biases Affect Prices?" *Journal of Finance* 60(1): 1-34.
- Cronqvist, H. and R. H. Thaler (2004). "Design Choices in Privatized Social-Security Systems: Learning from the Swedish Experience." *American Economic Review* 94(2): 424-428.
- Crosen, R. and U. Gneezy (2009). "Gender Differences in Preferences." *Journal of Economic Literature* 47(2): 448-474.
- Cude, B. J. and Y. Cai (2006). Assessing the Outcomes of a Social Marketing Program: Lessons Learned from Cleveland Saves."
- DeBondt, W. F. M. and R. H. Thaler (1995). Financial Decision-Making in Markets and Firms: A Behavioural Perspective. *Handbooks in Operations Research and Management Science*, Elsevier Science B.V. 9.
- DellaVigna, S. (2009). "Psychology and Economics: Evidence from the Field." *Journal of Economic Literature* 47 (2): 315-372.
- DellaVigna, S., J. A. List, and U. Malmendier (2010). "Testing for Altruism and Social Pressure in Charitable Giving", working paper
- DellaVigna, S. and U. Malmendier (2004). "Contract Design and Self-control: Theory and Evidence." *The Quarterly Journal of Economics* 119(2): 353-402.
- DellaVigna, S. and U. Malmendier (2006). "Paying Not to Go to the Gym." *American Economic Review* 96(3): 694-719.
- Dominitz, J., A. A. Hung and J. Yoong (2008). How Do Mutual Fund Fees Affect Investor Choices? Evidence from Survey Experiments, RAND Corporation Publications Department.

- Duflo, E., W. Gale, J. Liebman, P. Orszag and E. Saez (2006). "Saving Incentives for Low- and Middle-Income Families: Evidence from a Field Experiment with H&R Block." *The Quarterly Journal of Economics* 121(4): 1311-1346.
- Duflo, E., W. Gale, J. Liebman, P. Orszag and E. Saez (2007). "Savings Incentives for Low- and Moderate-Income Families in the United States: Why is the Saver's Credit Not More Effective?" *Journal of the European Economic Association* 5(2-3): 647-661.
- Duflo, E. and E. Saez (2003). "The Role Of Information And Social Interactions In Retirement Plan Decisions: Evidence From A Randomized Experiment." *The Quarterly Journal of Economics* 118(3): 815-842.
- Eliasz, K. and R. Spiegel (2006). "Contracting with Diversely Naive Agents." *Review of Economic Studies* 73(3): 689-714.
- Federal Deposit Insurance Corporation (2009) "FDIC National Survey of Unbanked and Underbanked Households"
- Federal Trade Commission(2004) "The Effect of Mortgage Broker Compensation Disclosures on Consumers and Competition: A Controlled Experiment", Bureau of Economics Staff Report
- Fehr, E. and K. M. Schmidt (2006). *The Economics of Fairness, Reciprocity and Altruism - Experimental Evidence and New Theories*, Elsevier.
- FINRA (2009), "National Financial Capability Study", available at <http://www.finrafoundation.org/resources/research/p120478>
- Fischhoff, B., P. Slovic, and S. Lichtenstein. (1977). "Knowing with Certainty: The Appropriateness of Extreme Confidence." *Journal of Experimental Psychology* 3: 553-664.
- Fortin, Mario and Prefontaine, Jacques (2008) "Credit: Some Macroeconomic, Market and Consumer Implications - Selected Issues and Trends from Four OECD Countries", OECD Consultant Report
- Fox, J. J., S. Bartholomae and J. Lee (2005). "Building the Case for Financial Education." *Journal of Consumer Affairs*(39): 195-214.
- Frank, R. G. (2004). "Behavioural Economics and Health Economics", working paper, National Bureau of Economic Research, Inc.
- Frederick, S., G. Loewenstein and T. O'Donoghue (2002). "Time Discounting and Time Preference: A Critical Review." *Journal of Economic Literature* 40(2): 351-401.
- French, K. R. and J. M. Poterba (1991). "Investor Diversification and International Equity Markets." *American Economic Review* 81(2): 222-226.
- Gabaix, X. and D. Laibson (2006). "Shrouded Attributes, Consumer Myopia, and Information Suppression in Competitive Markets." *The Quarterly Journal of Economics* 121(2): 505-540.
- Gartner, K. and R. M. Todd (2005). Effectiveness of online early intervention financial education programs for credit-card holders. *Proceedings*, Federal Reserve Bank of Chicago.

- Genesove, D. and C. Mayer (2001). "Loss aversion and seller behaviour: Evidence from the housing market." *Quarterly Journal of Economics* 116(4): 1233-1260.
- Gneezy, U., A. Kapteyn, and J. Potters (2003). "Evaluation Periods and Asset Prices in a Market Experiment." *Journal of Finance* 58(2): 821-838.
- Grether, D. M. (1980). "Bayes' Rule as a Descriptive Model: The Representativeness Heuristic." *Quarterly Journal of Economics* 95: 537-557.
- Grinblatt, M. (2001). "What Makes Investors Trade?" *Journal of Finance* 56(2): 589-616.
- Grinblatt, M. and B. Han (2003). "The Disposition Effect and Momentum", working paper, Ohio State University, Charles A. Dice Center for Research in Financial Economics.
- Grinblatt, M. and M. Keloharju (2001). "How Distance, Language, and Culture Influence Stockholdings and Trades." *Journal of Finance* 56(3): 1053-1073.
- Grinblatt, M. and M. Keloharju (2009). "Sensation Seeking, Overconfidence, and Trading Activity." *Journal of Finance* 64(2): 549-578.
- Gul, F. (1991). "A theory of disappointment aversion." *Econometrica* 59(6): 667-686.
- Habschick, M., B. Seidl, and J. Evers. (2007). *Survey of Financial Literacy Schemes in the EU27*, Report, Evers and Jung.
- Haisley, E., C. Cryder, G. Loewenstein and K. Volpp (2008). The appeal of lotteries and their use in incentive design. *Society for Judgment and Decision Making Preconference: Using Human Nature to Improve Human Life*, Chicago.
- Haisley, E., R. Mostafa, and G. Loewenstein (2008). "Myopic risk-seeking: The impact of narrow bracketing on lottery play." *Journal of Risk and Uncertainty* 37(1): 57-75.
- Haisley, E., R. Mostafa, and G. Loewenstein. (2008). "Subjective relative income and lottery ticket purchases." *Journal of Behavioural Decision Making* 21(3): 283-295.
- Hastings, J. S. and L. Tejada-Ashton (2008). Financial Literacy, Information, and Demand Elasticity: Survey and Experimental Evidence from Mexico, National Bureau of Economic Research, Inc.
- Hilgert, M. A., J. M. Hogarth and S.G. Beverley. (2003). "Household financial management: the connection between knowledge and behaviour." *Federal Reserve Bulletin*: 309-322.
- Hirshleifer, D., S. S. Lim and S.H. Teoh. (2009). "Driven to Distraction: Extraneous Events and Underreaction to Earnings News." *Journal of Finance* 64(5): 2289-2325.
- Hong, H., J. D. Kubik and J. Stein (2004). "Social Interaction and Stock-Market Participation." *Journal of Finance* 59(1): 137-163.
- Huberman, G. and W. Jiang (2006). "Offering versus Choice in 401(k) Plans: Equity Exposure and Number of Funds." *Journal of Finance* 61(2): 763-801.

- Huberman, G., S. Iyengar and W. Jiang (2006). "Defined Contribution Pension Plans: Determinants of Participation and Contribution Rates." *Journal of Financial Services Research* 31 (1):1-32.
- Internal Revenue Service (2009) "National Taxpayer Advocate 2009 Annual Report to Congress" Volume 1 Publication 2104 (Rev. 12-2009)
- Iyengar, S. S., G. Huberman and W. Jiang. (2004). "How Much Choice is Too Much? Contributions to 401(k) Retirement Plan's *Pension Design and Structure: New Lessons from Behavioural Finance*, Oxford University Press: 83-95.
- Iyengar, S. S. and E. Kamenica (2008). *Choice Proliferation, Simplicity Seeking, and Asset Allocation*, Chicago GSB
- Journal, W. S. (March 8, 2010). Economic Policy 'Nudge' Gives Way to a "Shove".
- Kahneman, D., J. L. Knetsch and R.H. Thaler. (1991). "The Endowment Effect, Loss Aversion, and Status Quo Bias: Anomalies." *Journal of Economic Perspectives* 5(1): 193-206.
- Kahneman, D. and M. W. Riepe (1998). "Aspects of Investor Psychology: Beliefs, preferences, and biases investment advisors should know about." *Journal of Portfolio Management* 24(4).
- Kahneman, D. and A. Tversky (1972). "Subjective Probability: A Judgement of Representativeness." *Cognitive Psychology* 3: 430-454.
- Kahneman, D. and A. Tversky (1979). "Prospect theory: An analysis of decision under risk." *Econometrica* 47(2): 263-291.
- Kahneman, D. and A. Tversky (1981). "The framing of decisions and the psychology of choice." *Science* 211(4481,): 453-458.
- Kahneman, D. and A. Tversky, eds. (1982). *Judgement under Uncertainty: Heuristics and Biases*, Cambridge University Press.
- Kliger, D. and B. Levit (2009). "Evaluation periods and asset prices: Myopic loss aversion at the financial marketplace." *Journal of Economic Behaviour & Organization* 71(2): 361-371.
- Kroszner, R. S. (2007 May 23). "Creating More Effective Consumer Disclosure."
- Laibson, D. (1997). "Golden Eggs and Hyperbolic Discounting." *The Quarterly Journal of Economics* 112(2): 443-477.
- Laibson, D. and B. C. Madrian (2004). "Plan Design and 401(k) Savings Outcomes." *National Tax Journal*.
- Laibson, D., A. Repetto and J. Tobacman(1998). "Self Control and Saving for Retirement." *Brookings Papers on Economic Activity* 1: 91-172.
- Laibson, D., A. Repetto and J. Tobacman. (2007). *Estimating Discount Functions with Consumption Choices over the Lifecycle*, National Bureau of Economic Research, Inc.

- Lee, C. M. C., A. Shleifer, and R.H. Thaler (1991). "Investor Sentiment and the Closed-End Fund Puzzle." *Journal of Finance* 46(1): 75-109.
- Loewenstein, G. (1996). "Out of Control: Visceral influences on Behaviour." *Organizational Behaviour and Human Decision Processes* 65(3): 272-292.
- Loewenstein, G. (2000). "Emotions in Economic Theory and Economic Behaviour." *American Economic Review* 90(2): 426-432.
- Loewenstein, G. and D. Adler (1995). "A Bias in the Prediction of Tastes." *Economic Journal* 105(431): 929-937.
- Loewenstein, G. and J. Lerner (2003). The role of affect in decision making. *Handbook of Affective Science*, Oxford University Press.
- Loewenstein, G., T. O'Donoghue and M. Rabin (2003). "Projection bias in predicting future utility." *Quarterly Journal of Economics* 118(4): 1209-1248.
- Loewenstein, G. and S. Rick (forthcoming). Emotion in economics (The challenge of emotions for economic theory). *Oxford Companion to the Affective Sciences* Oxford University Press.
- Lusardi, A. (2010). "Americans' Financial Capability", report prepared for the Financial Crisis Inquiry Commission, February 26, 2010
- Lusardi, A. (2008). "Household Saving Behaviour: The Role of Financial Literacy, Information, and Financial Education Programs", working paper National Bureau of Economic Research, Inc.
- Lusardi, A. (2008). "Increasing the Effectiveness of Financial Education in the Workplace", Center for Research on Pensions and Welfare Policies, Turin (Italy).
- Lusardi, A., P. Keller, and A Keller. (2009). "Increasing the Effectiveness of Retirement Saving Programs for Females and Low Income Employees: A Marketing Approach", Report, National Endowment for Financial Education.
- Lusardi, A. and O. S. Mitchell (2009). "How Ordinary Consumers Make Complex Economic Decisions: Financial Literacy and Retirement Readiness", working paper, National Bureau of Economic Research, Inc.
- Lusardi, A., O. S. Mitchell and V. Curto (2009). "Financial Literacy among the Young: Evidence and Implications for Consumer Policy", working paper, National Bureau of Economic Research, Inc.
- Lusardi, A. and O. S. Mitchell (2007). "Financial Literacy and Retirement Preparedness: Evidence and Implications for Financial Education." *Business Economics* 42(1): 35-44.
- Lusardi, A. and P. Tufano (2009). Debt Literacy, Financial Experiences, and Overindebtedness, National Bureau of Economic Research, Inc.
- Lyons, A. C., L. Palmer, K. Jayaratne and E Scherpf (2006). "Are We Making the Grade? A National Overview of Financial Education and Program Evaluation." *Journal of Consumer Affairs* 40(2).

- Lyons, A. C. and E. Scherpf (2005). Moving from unbanked to banked: evidence from the Money Smart program. *Proceedings*, Federal Reserve Bank of Chicago. No abstract is available for this item.
- Madrian, B. C. and D. F. Shea (2001). "The Power of Suggestion: Inertia in 401(k) Participation and Savings Behaviour." *The Quarterly Journal of Economics* 116(4): 1149-1187.
- Malmendier, U. and D. Shanthikumar (2007). "Are small investors naive about incentives?" *Journal of Financial Economics* 85(2): 457-489. No abstract is available for this item.
- McCormick, M. H. (2009). "The Effectiveness of Youth Financial Education: A Review of the Literature." *Journal of Financial Counseling and Planning*.
- Meier, S. and C. Sprenger (2008). Discounting Financial Literacy: Time Preferences and Participation in Financial Education Programs, Institute for the Study of Labor (IZA).
- Meier, S. and C. Sprenger (2010). "Present-Biased Preferences and Credit Card Borrowing." *American Economic Journal: Applied Economics* 2(1): 193-210.
- Mullainathan, S. and A. Shleifer (2005). "The Market for News." *American Economic Review* 95(4): 1031-1053.
- Mundy, S. (2008). Financial Education Programmes in Schools: Analysis of Selected Current Programmes and Literature, OECD.
- Nenkov, G. Y., D. J. MacInnis, and M. Morrin. (2009). "How do Emotions Influence Saving Behaviour", Boston College Center for Retirement Research
- Odean, T. (1998). "Are Investors Reluctant to Realize Their Losses?" *Journal of Finance* 53(5): 1775-1798.
- O'Donnell, N. (2009). Consumer Financial Capability: A Comparison of the UK and Ireland, Central Bank & Financial Services Authority of Ireland (CBFSAI).
- O'Donoghue, T. and M. Rabin (1999). "Doing It Now or Later." *American Economic Review* 89(1): 103-124.
- O'Donoghue, T. and M. Rabin (2001). "Choice And Procrastination." *The Quarterly Journal of Economics* 116(1): 121-160.
- OECD (2005), *Improving Financial Literacy: Analysis of Issues and Policies*, OECD, Paris.
- OECD (2005b), *Principles and Good Practices for Financial Education and Awareness*, OECD, Paris.
- OECD (2006), *The Importance of Financial Education*, OECD Policy Brief
- OECD (2009), *Good Practices on Financial Education and Awareness Relating to Credit*, OECD, Paris.
- OECD (2008), *Improving Financial Education and Awareness on Insurance and Private Pensions*, OECD, Paris.
- OECD (2008b), *Good Practices for Enhanced Risk Awareness and Education on Insurance Issues*, OECD, Paris.

- OECD (2008c), *Good Practices for Financial Education Relating to Private Pensions*, OECD, Paris.
- OECD (2009), *Improving Financial Education and Awareness on Insurance and Private Pensions*. OECD, Paris.
- Oster, S. M. and F.M. Scott-Morton (2005). "Behavioural Biases Meet the Market: The Case of Magazine Subscription Prices." *The B.E. Journal of Economic Analysis & Policy*
- Rabin, M. (1998). "Psychology and Economics." *Journal of Economic Literature* 36(1): 11-46.
- Rick, S. and G. Loewenstein (2008). *The Role of Emotion in Economic Behaviour. Handbook of Emotions*, The Guilford Press.
- Ross, L. and R.E. Nisbett(1991). *The Person and the Situation: Perspectives of Social Psychology*, Mc Graw-Hill.
- Samuelson, W. and R. Zeckhauser (1988). "Status Quo Bias in Decision Making." *Journal of Risk and Uncertainty* 1(1): 7-59.
- Shefrin, H. and M. Statman (1985). "The Disposition to Sell Winners Too Early and Ride Losers Too Long: Theory and Evidence." *Journal of Finance* 40(3): 777-790.
- Shefrin, H. M. and M. Statman (1984). "Explaining investor preference for cash dividends." *Journal of Financial Economics* 13(2): 253-282.
- Shefrin, H. M. and R. H. Thaler (1988). "The Behavioural Life-Cycle Hypothesis." *Economic Inquiry* 26(4): 609-643.
- Shiv, B., G. Loewenstein, A. Bechara, H. Damasio and A.R. Damasio (2005). "Investment Behaviour and the Negative Side of Emotion." *Psychological Science* 16(6).
- Skiba, P. M. and J. Tobacman (2008). *Payday Loans, Uncertainty, and Discounting: Explaining Patterns of Borrowing, Repayment, and Default*, Unpublished working paper.
- Smith, B. A. and F. Stewart (2009). *Learning from the Experience of Organisation of Economic Co-operation and Development Countries: Lessons for Policy; Programs and Evaluations. Overcoming the Saving Slump: How to Increase the Effectiveness of Financial Education*, University of Chicago.
- Summers, B., C. Ironfield-Smith, D. Duxbury, R. Hudson and K. Keasey. (2005). "Informed choice: consumer preferences for information on pensions." *Journal of Financial Regulation and Compliance* 13(3): 260-267.
- Svenson, O. (1991). "Are we all Less Risky and More Skilful than Our Fellow Drivers?" *Acta Psychologica* 47(2).
- Sydnor, J. (forthcoming). "(Over)insuring Modest Risks." *American Economic Journal: Applied Economics*.
- Thaler, R. (1985). "Mental Accounting and Consumer Choice." *Marketing Science* 4(3): 199-214.
- Thaler, R. H. (1994). "Psychology and Savings Policies." *American Economic Review* 84(2): 186-192.

- Thaler, R. H. (1999). "Mental Accounting Matters." *Journal of Behavioural Decision Making* 12: 183-206.
- Thaler, R. H. and S. Benartzi (2004). "Save More Tomorrow (TM): Using Behavioural Economics to Increase Employee Saving." *Journal of Political Economy* 112(S1): S164-S187.
- Thaler, R. H. and H. M. Shefrin (1981). "An Economic Theory of Self-Control." *Journal of Political Economy* 89(2): 392-406.
- Thaler, R. H., A. Tversky, D. Kahneman and A. Schwartz. (1997). "The Effect of Myopia and Loss Aversion on Risk Taking: An Experimental Test." *The Quarterly Journal of Economics* 112(2): 647-661.
- Tufano, P. (2007). "Saving Whilst Gambling: An Empirical Analysis of U.K. Premium Bonds", working paper, Harvard Business School.
- Tufano, U. F. I. P. and D. Schneider (2008). "Using Financial Innovation to Support Savers: From Coercion to Excitement", Harvard Business School.
- van Rooij, M., A. Lusardi, and R. Alessi (2009). "Financial Literacy and Retirement Planning in the Netherlands", Netherlands Central Bank, Research Department.
- Willis, L. E. (forthcoming). "Evidence and Ideology in Assessing the Effectiveness of Financial Literacy Education." *San Diego Law Review*

Chapter 2

CAN ECONOMIC PSYCHOLOGY AND BEHAVIOURAL ECONOMICS HELP IMPROVE FINANCIAL EDUCATION?

by
Vera Rita De Mello Ferreira *

This chapter starts by noting that the provision of knowledge and information in itself is not sufficient; the information must be incorporated into daily life. It then goes on to describe an innovative solution developed for Brazilian school children. The approach combines information and recommendations about personal financial issues with information about the way in which psychological factors may both help and hinder behaviour. This psychological guidance is intended to raise the pupil's awareness of their own traits and trigger discussions about the typical psychological factors that influence financial decision making.

* International Association for Research in Economic Psychology, Brazil. This chapter was originally published in OECD (2011), "Improving Financial Education Efficiency: OECD-Bank of Italy Symposium on Financial Literacy". The OECD is grateful to the authors for their valuable contributions. The views expressed here are the sole responsibility of the authors and do not necessarily reflect those of the OECD Committee on Financial Markets and the Insurance and Private Pensions Committee, the OECD Secretariat, the member or non-member countries.

1. Education, mind and behaviour – Where we stand

Financial education deals with information – and learning. It is undeniably essential to help citizens of any country to better manage their financial life and hopefully make favourable choices that will contribute to increasing their well-being too.

At the same time, it aims to changing behaviour in the sense that information on financial issues ought to be incorporated into daily life if we mean financial education to be effective. And this is where we run into typical difficulties: how can technical information become usable and make an actual difference in terms of new styles of financial organising regarding the life of individuals, groups and whole populations?

Some of the problems may be listed as:

1. Trouble processing information – data is routinely distorted while being transmitted, whether in large or small scale, socially or individually, and it is not easy to promptly identify the way they have been altered, which may lead to strategies rendered useless, money being wasted, people losing motivation and giving up, financial problems persisting; and this whole scenario may go unnoticed by policy makers and population alike; at the end, there may be a feeling of “job done” on the part of the former, and another of insufficiency among the latter, often experienced as failure to avoid common mistakes and to be able to make the most favourable choices (Tversky & Kahneman, 1974; Simon, 1978; Kahneman and Tversky, 1979; Earl et al., 2007).
2. Human mental operations are anchored on deeper and more primitive emotional factors, and are never totally free of such influence – emotions either allow for higher functions (related to thinking) to be achieved or not, and in all cases lend affective dimensions to every area of the mind; again this may take place unbeknownst to the person or community, but it will certainly impact all processes, including those related to education and information, and certainly any change of behaviour; if not addressed, it may hinder all efforts to develop financial capability (Freud, 1911, 1915; Bion, 1961; Klein, 1963; Ferreira, 2007c; Finucane et al., 2000; Loewenstein et al., 2001; Slovic, 2002).
3. Different mental systems – although our motivations seem to always converge towards the same direction, namely reduce internal tension, whether removing unpleasant stimuli, or finding gratification for demands felt, the ways to accomplish this goal can be quite distinct, and this will have major implications for decisions, behaviour – and policy-making; *System 1* is the most prevailing and involves fast and almost instinctive unconscious operations performed without really thinking, based on association instead, in an automatic effortless and non-controlled way, using primitive ancient brain areas – they can be useful for quick selecting (on simple basis of pain and pleasure criteria, and highly susceptible to illusions) and basic surviving, but since it does not involve reflection, there is no real learning, just training at most; the other one, *System 2*, has been more recently developed in humankind, and involves reasoning, language and reflection; it is conscious, more deliberate, and slower, since it requires effort, going well with control, logic, rules, temporal dimensions and the possibility of learning (Kahneman, 2002; Slovic, 2002; Thaler & Sunstein, 2008; Freud, 1911).
4. Hot and cold selves – a great number of our attitude and behaviour inconsistencies can also be explained by the simultaneous existence of different *selves* in our personality, particularly a *hot*

one, that only sees the short term horizon, wishes to be immediately gratified or have any threat of frustration dismissed, and disregards consequences; and another one, the *cold* state, that is able to ponder and think more carefully, integrating both present and future scenarios (plus past data as well), and always intends to do what seems to be really best for oneself, considering the long range as well; the trouble lies on the fact that the latter, also called the *planner*, is usually not the one that actually behaves and makes choices when the time comes – this is up to the “hot” *doer*, with his customary myopia that will make him/her lean towards anything that promises instant relief, while previous sensible plans carefully made by the planner may be entirely forgotten and overcome by present urges – and it should be noted that the hot self is permanently dipped into what are felt to be present urges (Thaler & Sunstein, 2008; Freud, 1911; Klein, 1963); this approach can relate to the previous *Systems 1* and *2*, respectively.

5. Planning and excessive optimism – also as a result of the issues above (*Systems 1* and *2*, hot and cold selves), it is common to find gross miscalculations involving future plans, that seldom come out as initially devised; budgets and financial planning are routinely victims of this typical tendency to overestimate resources and underestimate difficulties and risks; moreover this attitude is rather resistant to change and it is usually hard to learn from this kind of experience, which increases the chance to repeat it each time (Kahneman, 2007; Thaler & Sunstein, 2008; Ariely, 2008).
6. Cognitive dissonance – this phenomenon, originally described by Festinger, in 1957, may be found at the root of most mental distortions (cf. ahead “heuristics”) and can be described as the uncomfortable perception of contradictions within oneself, that leads the person to attempt to reduce this distress, even if it implies non-constructive behaviour (f.i., suppressing the awareness of risk while engaging in activities that do involve it, when the attraction towards desired benefits is felt to be stronger, as we may see in several kinds of investments, financial crisis, and swindler stories alike) (Shiller, 2000; Thaler & Sunstein, 2008).
7. Group behaviour – some psychological operations become more prevalent among groups (usually, the more primitive ones, such as the tendency to act according to herd behaviour, f.i.), while others turn dimmer (those that involve more rational thinking, waiting, pondering etc.), which means that the group dimension ought to be accurately considered as far as policy-making goes, since individual behaviour can be quite different from group behaviour, and humans live in groups most of the time (Akerlof & Shiller, 2009; Shiller, 2000; Freud, 1921; Bion, 1970, 1975).
8. Reality is perceived in different ways by individuals, groups and cultures, and this perception may also vary within them at different moments, all of which will have implications in their reacting to stimuli, grasping and decoding data, and making choices (Lea et al., 1987).
9. It is common to justify choices using apparently rational arguments, even though true motivation may be far from that; besides, the person can be altogether unaware of her motivation – and still be able to offer long explanations for it all the same (Bion, 1970).
10. In summary, we are all subject to both cognitive and emotional limitations regarding perception, memory and judgment of data, resort to mental shortcuts (*heuristics*) in an attempt to deal with complexity that may lie above our competence and as a result, display several systematic errors while trying to make choices, which often turn out to be inconsistent. Some

authors will go as far to say that we are more similar to Homer Simpson, the character from the cartoons, than to the model of homo-oeconomicus that traditional economics assigns to us (Thaler & Sunstein, 2008).

Since financial management often implies choices over alternatives amidst a scenario of growing complexity, including some that may take place only once or seldom in a lifetime (e.g. retiring, buying a home, having children), it is not a simple job to try and get them always right (Van Raaij et al., 2007). Lack of information is certainly a major problem, but even when it is available, dealing with technical details is of no less importance – particularly when decision-makers can stumble over so many shortcomings, including those of psychological nature.

The areas lying in the intersection between psychology and economics, namely economic psychology and behavioural economics, have been researching the issues around *bounded* rationality – as opposed to rationality that optimises choices, as conceived by mainstream economics – for many decades now and may offer some insight on how to address them, thus becoming a relevant ally to financial education initiatives.

2. Economic psychology or behavioural economics – Is there a difference?

Both economic psychology and behavioural economics study the same subject: economic behaviour and decision-making, and may be seen as practically the same discipline. Economic psychology dates back to 1881, when Gabriel Tarde, a French jurist and social thinker first used the expression to indicate the need for economics to expand so as to include psychological perspectives into their explanations of economic behaviour. Later on, in 1902, he also published a book titled *La Psychologie Economique* (Wärneryd, 2008). Around the same time, another social thinker, Thorstein Veblen, of Norwegian origin but living in the US, also discussed and published criticism towards the narrowness of the conventional economic outlook, but his efforts did not find a warm welcome among the academic community. It was during World War II that a researcher who had training both in psychology and economics, George Katona, Hungarian emigrated to the US, made the first large surveys on the *Consumer Sentiment Index*, that wound up surprising policy makers and the economic community alike. Contrary to the current economists' view that predicted another recession for the US after the war, Katona and his team pointed to a coming boom, which did indeed take place over the following years. This is considered to be the beginning of contemporary economic psychology, and his book *Psychological Economics* (1975) a landmark for it. It is also worth noting that in 1978 Herbert Simon, trained in economics, psychology, business and artificial intelligence, won the Nobel Prize of Economics for his bounded rationality theory. However, the *zeitgeist* at the time, crowning rationality and expected utility theory as absolute rulers, did not seem to be quite favourable to this type of questioning and resonance was only moderate (Ferreira, 2007a, 2008).

Around the same time, however, two social psychologists, Amos Tversky and Daniel Kahneman, were running experiments and identifying a great number of systematic errors related to the use of shortcuts, *heuristics*, for judging data in decision-making. In 1980, an economist who did not accept mainstream assumptions in traditional economics, Richard Thaler, also began to publish articles that debated actual economic behaviour, as opposed to what was expected – and taken for granted – by orthodox economics. A few other economists shared these views, and this is considered to be the beginning of behavioural economics. Another behavioural economist, Peter Earl, describes the field as follows:

Behavioural economics draws upon fieldwork, experiments and research in disciplines such as psychology for building blocks to construct economic analysis that is more descriptively realistic and both augments and qualifies traditional economics as a tool for designing policy. (...) Whereas economists traditionally have seen choice as an optimising activity subject to given preferences and a well-defined budget constraint, behavioural economics sees everyday life as a process in which humans with limited cognitive capacity try to cope with both information overload and the absence of relevant information and knowledge by evolving targets for what seems feasible and systems of rules for trying to find ways of meeting these targets. (Earl, 2005, p.1)

Further into this dialog between economics and psychology, in 2002, Amos Tversky had deceased, so Daniel Kahneman alone became the first psychologist to win the Nobel Prize in economics, for their work together on heuristics, biases and the prospect theory, based on experiments, which countered the expected utility theory, stating that our choices are not always consistent. This is probably the most important research line in the field to date, and it also supports the arguments in the present discussion.

To summarise, the discipline originally discussed how the economic science could be expanded, helped mainly by psychology and sociology. Later on, it gained a bounded rationality perspective, with Simon's theory, regarding mental processing of data, and having, as one important unfolding, the idea that decisions could be at most *satisficing*, but never optimal, going against the mainstream economic view on economic behaviour. Due to our computing and resource limitations, Simon defines bounded rationality as "*the need to search for decision alternatives, the replacement of optimisation by targets and satisficing goals, and mechanisms of learning and adaptation*" (1978, p.366), explaining that "*decision makers can satisfice either by finding optimum solutions for a simplified world, or by finding satisfactory solutions for a more realistic world.*" (p.345).

As a result of this view, the investigation of systematic errors followed, derived from experiments that tested heuristics and biases (cf. a comprehensive list of heuristics at the next section). More recently, however, research in the area has been focusing emotions and their powerful influence over behaviour and attitudes, particularly troubles concerning lack of self control and failure to reflect upon relevant issues, consequently incurring on mistakes and economic and financial vicious circles (f.i., Loewenstein, 2006; Lerner et al., 2005; Shiv et al., 2005; Loewenstein et al., 2001; Finucane et al., 2000; Ferreira, 2007c). This has been supported by studies undertaken by neuroscience as well, that have provided evidence for the prominent role of emotions in human mental functioning using brain scanning techniques to map decision-making neurological circuits. And finally – the answer to the question at the title of this section is "no", there is no difference today between economic psychology and behavioural economics.

3. A List of Heuristics by Peter Earlⁱ

The respected behavioural economist Peter Earl, who has been a professor on both Australian and New Zealander universities, prepared a paper for New Zealand government in 2005, where he summarises the main heuristics that may be encountered within decision-making, cataloguing them according to the step of the process where they tend to occur. his list is reproduced below:

Heuristics and biases in acquiring information

- Availability bias — judgment is affected by the ease of recall of examples/frequency with which events are publicised rather than being proportionate to frequency of occurrence.

- Selective perception — people tend to see what they expect to see, downplay counter-examples and seek verification for their expectations rather than looking for anomalies.
- Concrete information dominates over abstract, statistical information.
- The use of frequency, not relative frequency, to judge the strength of predictive relationships.
- Illusory correlation — people often select inappropriate variables as supposed causes of particular phenomena.
- The focus of decision makers depends on how data are presented — for example, quantitative data may inhibit concentration on qualitative data, or vice versa; which items of information are absorbed may depend on their places in a sequence of pieces of information, while seemingly logical displays of data may distract people from crucial data that are missing, and so on.
- Framing effects — for example, how inclined a person is to search to save money on a product may depend on the proportionate saving that he or she thinks it might be possible to achieve, rather than the absolute amount, even though a 1 % saving on, say, a \$10 000 car is more than a 10 % saving on a \$500 in-car entertainment system.

Heuristics and biases in processing information

- Tendencies to treat small probabilities as zero probabilities and large probabilities as certainties, or to avoid thinking in terms of a range of possible outcomes and instead focus only a single “best guess”.
- Poor understanding of compound probabilities.
- Tendencies to fail to use a consistent judgmental strategy over repeated cases.
- Law of *small* numbers — giving too much weight to small sample results.
- Tendencies to discount the future hyperbolically, not exponentially, which can make people prone problems of addiction.
- Superficial evaluation in the face of complexity/emotional stress, resulting in impulsive choices.
- Social pressures tend to cause judgments to be distorted in favour of the majority view, however ill-founded it might be (as in the story of The Emperor’s New Clothes).

Heuristics and biases in choice

- Sunk cost bias — as where a person consumes something (say, the facilities of a fitness club) because they have already spent money enabling them to do so; their continued consumption of it is a way of making their expenditure seem justified, even though, if they could “turn the clock back”, they would not consume it even if it were available without any charge.
- Endowment effect — how much a person will require to give up something they already have tends to be more than what they would have been willing to pay to acquire it in the first place.

- Illusion of control — the very act of making a choice can make people feel less worried about uncertainties that they earlier perceived.
- Wishful thinking — to make a choice seem appropriate when it is being taken for reasons that they are reluctant or unable to admit to themselves or others, people tend to inflate their estimates of its payoffs in other dimensions.
- Those who are aware of their fallibility as decision makers tend to pursue self control strategies to prevent themselves from being led into temptation, even though they know that these strategies promise them less than they would be able to achieve if they chose alternative strategies that depended on them being able to control themselves. (For example, some consumers voluntarily open Christmas Club Savings Accounts that offer miserly rates of interest but have the advantage of being impossible to access for withdrawals until Christmas approaches.)

Post-choice heuristics and biases

- “Gambler’s fallacy” — after observing a run of one kind of outcome, people begin to assume odds of its rival happening are increasing.
- Attribution bias — people tend to see success as due to their own skill, but failure as due to “bad luck”.
- Mental recall problems, which cause erroneous reconstructions of what happened and affect subsequent choices.
- Hindsight bias — people tend to be able to find plausible explanations for things that in prospect would have been surprising to them.

All these heuristics and their resulting biases will certainly disturb adequate decision-making inducing to systematic errors – most people make them, most of the time –, and for this reason ought to be addressed by financial education programmes.

4. Financial education and economic psychology – A promising dialogue

With knowledge of this kind in hand and properly adapted to the intended target population, financial education programmes can benefit from reaching further into all mental systems, that is, 1 and 2, thus increasing chances for real change in behaviour and consequently more beneficial choices. Since programmes must address the automatic mental system if they mean to actually change behaviour, conveying technical information alone rarely gets to the point in this respect.

It is worth noting that although economic psychology and consumer psychology share the same subject – studies on economic behaviour and decision-making – we consider the former to have almost the opposite vocation when compared to the latter. In our view, economic psychology and behavioural economics should help citizens to become more aware of their own psychological operations while consuming, planning, investing, i.e. making choices, rather than inform manufacturers or advertisers who may take advantage of their already identified vulnerabilities in these processes. Therefore, economic psychology would have much in common with financial education programmes that have a similar goal of trying to help citizens to improve their economic and financial decisions.

Brazil has taken some initial steps towards this goal with ENEF-Estratégia Nacional de Educação Financeira, the proposal for a financial education programme launched by federal government and coordinated by Brazilian Central Bank, CVM, our equivalent to SEC-Securities and Exchange Commission, PREVIC (formerly SPC), the Private Pension Plans Secretary, and SUSEP, Superintendence of Private Insurance, along with the Ministries of Education and of Justice, school systems representatives and several non-government organisations. In its pilot version it is initially directed to high school students, who shall receive a book (BRASIL COREMEC, 2010) designed to be used by teachers of any subject, since contents are displayed in accessible format, both visually and content-wise.

In action – the Brazilian programme

ENEF material was prepared by specialists on education, along with consultants for finance, communication and economic psychology (the latter, Vera R.M. Ferreira). It addresses daily life situations, involving the financial aspects of family and social life, personal belongings, work, entrepreneurship, projects, public goods, national and international economics, over different time spans (short, medium and long term). There are seventy-two *learning opportunities*, that comprehend items such as: a recap of what is actually done in that situation by the student at that point, another one to check what has been discussed, potential adaptations to regional differences, social and environmental responsibility, possibilities of disseminating this knowledge, autonomous decision-making, that intends to translate the notions into individual and context use, besides the economic psychological *blinkers*.

These blinkers, in the shape of red boxes highlighted in the book, convey practical economic psychological notions that can be used in daily life, such as mental accounting, inter-temporal choice with hyperbolic discounting, anchoring, framing, impulsive buying, credit use, the role of illusions, affective forecasting related to consumption, marketing traps and other psychological factors present in economic and financial decision-making.

Based on the assumption that technical information on finance is not enough to actually change behaviour, due to factors such as our above mentioned bounded rationality and vastly documented anomalies and inconsistencies in economic behaviour, biases in perception, memory and judgement of data, plus the influence of emotions on decision-making, these contributions, originated in research on economic psychology, have been included. Their goal is to raise awareness, offer favourable conditions to the appearance of insights both over systematic errors and strategies to better deal with them, and to trigger discussions on the psychology of economic decisions (Ferreira, 2007b, 2008; Ferreira & Lima, 2009).

The programme is initially dedicated to high school students, and later on it is intended to reach elementary schools as well. Teachers will be trained at first, and they are expected to work at least in pairs in each school. The pilot version of the programme is starting June 2010, when over two hundred schools in four different states will use the material. These will be evaluated in contrast to an equivalent number of other schools that shall be part of the control group. This thorough evaluation, due to be finished in 2011, will also verify the psychological impact of the programme, in which may be a rare opportunity to be able to measure this kind of result in this size of scale. To our knowledge, this is the first financial education national programme to include economic psychology/behavioural economics to this extent.

Here are some examples taken from the book (BRASIL COREMEC, 2010):

1. In the “daily family life” section, while discussing about budget, writing down expenses, and saving, the blinker says:

Another common mistake is not to have control over the money saved. To avoid spending on other things the money you have saved when you did not have that snack, what about putting it away in an envelope where you can write down the name of your goal – “new sneakers”? This is a good technique because when we name the money, we respect more what we intend to do with it. It is important to have discipline and patience, sticking to our goal. Otherwise, we may forget why we have been saving money, and decide to spend it on impulse, thus jeopardising our planning. We can decide to change our project at any time and spend the money we had been saving, but should beware of what we are doing. (p.19)

2. In the same section, but on credit:

Remember that everything in life is finite... Not only money, but time, efforts, energy, health, and even life itself! This is why making these choices is unavoidable – there is no way you can have it all, all the time. At such moments, lowering your expectations might be the smart thing to do! It is not about being mediocre, but rather stopping tormenting yourself over impossible unfeasible goals, while you concentrate your energy on what you can actually achieve. (p.29)

3. In the “social life” section, on consuming:

Sometimes we wonder whether spending money on something is important or not. Do we really need that? How can we decide about it? Here is one hint: don't buy it immediately, but rather allow yourself a brief interval, count up to 100, leave the store, or wait to purchase it the next day. This really works. If it was not important, but rather guided by impulse, using these strategies pushes the impulse aside and in general we will not buy something when we really did not need it. (p.69)

4. In the same section, on credit:

The use of cards or checks stimulates further spending, more than we would had we been using cash – this has already been confirmed by several studies. It seems that watching the money actually leaving the wallet is felt to be more “painful”, while using credit or debt cards seem painless. The same goes for filling a check. After all, away from the eyes... (p.83)

5. In the section “personal belongings”, on the perspective of buying a computer:

You are not forced to always try and get as much money as possible. The cost of a choice is not always measured by money. Happiness, well-being and health may be more important too. Don't forget that happiness implies sacrifices and giving up as well, so be careful when you exchange a greater happiness later on for a little immediate satisfaction. Just be aware of the costs involved and decide what is best for you in each situation, calculating well the cost of your decisions. (p.116)

6. In the same section, on consuming with responsibility, some brief explanations on psychological “traps” are added, f.i. about:

a. Focalism – when I imagine, NOW, what I will be feeling when I actually have the product, I am dedicating all my attention to this subject, therefore I will suppose that I will be very happy, or

not, when I do buy it. However, if I wind up buying it, that is going to happen in another moment, when I will have other concerns and feelings in mind, and there is no guarantee that I will feel the same as I had previously supposed I would. That is, focus changes.

b. Difference between the “hot self” and the “cold self” – when I am burning with the desire to have an object (we can sweat, get anxious and may not even know the reason for it very clearly), I lend this object the power to make me the happiest person in the world, the most powerful and beautiful etc. “I’ll be amazing when I wear this shirt”, “This mobile is more than perfect”, and so on. Later on, though, when I really purchase it, I realise that nothing has changed, I am still the same person and all. “Oh boy, that wasn’t all the success that I had anticipated.” It is similar to going grocery shopping when one is hungry (“hot”), or after eating (“cold”). Usually, people who go to the supermarket hungry will buy much more products than those who go in a more serene state. (p.130)

There are over 20 of such “blinkers” in this volume, that draw attention to issues such as: compulsive and impulsive buying (including notions like the fact that our desires have an unconscious root, and can never be fully satisfied, plus the importance of comparing prices before purchasing); the real meaning of taking credit (it is not like that you have become any richer, since it will have to be paid back later – and with interest, that can be as high as 12% a month, in Brazil!); anchoring (and how we are susceptible to reference values, i.e., this can easily be manipulated by publicity, f.i.); framing (upon the example of prices routinely being displayed as \$xxx,99, that induce us to believe it is significantly cheaper than the full price); several on mental accounting (the importance of planning carefully and on real basis, i.e., net rather than gross income, that looks more attractive, since it is higher; the risks of relying on future income and destining it to too many goals, that will prove to be unattainable at the end, along with temptations seen in advertising, all this resulting in possible debt problems; the difference between having bills of higher value and bills of lower value in the wallet, as the latter tend to be spent faster and more carelessly); the power of group pressure upon consuming and, often enough, buying things one does not need; the difference between feasible dreams and unrealistic ones.

There is also a short section on behavioural finance itself, explaining what it is and giving examples of studies, and a quick quiz to help identify what kind of consumer the person is, regarding psychological features.

Most of the information is not generally known by this population (high school students), and possibly neither by their families, so it is expected that these notions will arouse their interest, making them pay closer attention to their own economic behaviour, while also bringing the topic home to discuss among family and friends. These students would thus act as multipliers disseminating this knowledge even further.

Another line of contribution emerges from a recent topic that has been researched and discussed, mainly by behavioural economists, involving *choice architecture*. The Brazilian programme has not incorporated this type of context designing yet, but it is already an important step to have included psychological economic notions in it, thus providing a pioneer perspective to financial education so far. Nevertheless, it is worthwhile discussing this perspective as it may offer instigating insights to financial education.

In debate – choice architecture and policy-making

Choice architecture, also known under different nominations, such as *light paternalism* (Loewenstein & Haisley, 2008), *libertarian paternalism* (Sunstein & Thaler, 2003, Thaler & Sunstein, 2008) or *asymmetric paternalism* (Camerer et al., 2003 *apud* Loewenstein & Haisley, 2008), proposes the design of contexts to make them favourable to induce decision-makers towards better choices (Ferreira & Lima, 2009). Naturally, there may be a debate around what is “better”, and to whom it is better, but we can also remember that policy-making does involve this issue in a rather irrevocable way as well. So let’s first examine their argument.

Thaler and Sunstein (2008) explain that good decisions are made when one has experience, good information and immediate feedback, while bad ones result from lack of experience, too little information and either slow or scarce feedback. In their view, knowledge about human behaviour can be greatly enhanced if we take a close look at how we make systematic mistakes, and in turn, knowing how we think should help to design foolproof contexts.

Considering that people are more often than not trying to make choices and deal with a complex world, far from the ideal conditions to think and examine their options, they usually resort to shortcuts to do it, which may always represent hazards to them as well. They are busy and their attention – another limited resource – must tend to several issues at the same time. These heuristics – or rules of thumb – are supposed to turn the tasks of perceiving and judging simpler and faster, but as we have seen, they also lose accuracy, and routinely lead to biases, some of which may drive one to systematic errors. At the same time, routine and habits, along with our natural tendency to inertia, can be very powerful to dictate (inadequate) behaviour.

There is also a concern over fairness in their proposal: choice architecture and the implementation of *nudges* – subtle clues to push the person towards the option she would like to choose herself, but might get confused midway due to all limitations previously described – would help minimise costs imposed over those who, despite their best intentions, do not succeed making good choices. The idea is *“to see how the world might be made easier, or safer, for the Homers among us (and the Homer lurking somewhere in each of us). If people can rely on their Automatic Systems without getting into terrible trouble, their lives should be easier, better, and longer.”* (Thaler & Sunstein, 2008, p.22). In other words, libertarian paternalism golden rule is to *“offer nudges that are most likely to help and least likely to inflict harm”* (p.72), in order to help less sophisticated people while imposing minimal costs on others.

To them, nudges are necessary when:

1. choices have delayed effects;
2. choices are difficult, infrequent and offer insufficient feedback;
3. the relation between choice and experience is ambiguous.

A few points ought to be made on choice architecture before we go on with its main proposals: it is around, whether we like it or not, whether we are aware of it or not; and it can be either favourable to decision-makers or not, but there is little doubt that it will affect them. Therefore, it is relevant to policy-making to get acquainted with its basic principles, as stated by Thaler and Sunstein (2008, p.83-97):

1. *Defaults* – there is a general tendency to choose the option that offers the least resistance, thus the enormous power of status quo conditions – leave things the way they are, or else choose not to choose – “I’ll take whatever comes...”
 - therefore, it is very important to make sure what kind of default option is offered, since most people will pick it simply because it is the default, without analysing it any closer;
 - one common example is subscriptions with automatic renewal, that guarantee high rates of adherence;
 - however, not all default options are best for decision-makers – nevertheless, it will be unavoidable to always have *some* default option when decisions are at stake, so this will have to be carefully considered by policy makers.
2. *Errors* – human beings are far from being foolproof, so designing settings and decision-making contexts should take this into consideration:
 - errors can be found in all realms, from forgetting cards at ATM’s (after finishing a task, our mind shuts off that function and our attention is directed to other activities), to surgeons operating on wrong limbs, patients forgetting to take their medicine, unnecessary items being purchased etc;
 - design that addresses our shortcomings can help better choices to be made.
3. *Feedback* – this is the best practice to improve performance in almost all areas – we learn when we have information immediately after having done something, when it is fresh in our minds and we have the chance to correct whatever may be necessary:
 - once again, well designed systems would inform when some task was performed correctly or not, and even better, warn just before some problem might occur (f.i., just like the warning before the battery in devices go too low, could a similar procedure be adopted by banks, before clients run out of funds? – with an important observation, though: these warnings cannot be too frequent, otherwise we tend to ignore them!; and of course banks would have to be *nudged* in this direction...).
4. *Linking – or mapping – choice to welfare* – in complex decisions it is not easy to imagine later or collateral effects and other consequences, real benefits etc., so it would be helpful to improve the ability to map choices as fully as possible, thus making the selection of favourable alternatives more likely; this can be done:
 - making each option understandable – f.i., transforming numbers into elements used in daily life instead;
 - turning costs that are hard to devise – f.i., the costs of having a credit card, mobile phone, insurance, instalments and other items – into easy to calculate and relate to activities, bringing all fees, taxes, interest etc. together, in order to also make it simpler to compare products; also this kind of information should be displayed clearly in terms of language and format (large enough fonts etc.);

- another measure is having companies send their clients once a year the complete list of services used by them with all costs involved, so they might be able to properly compare them to competitors and choose what is best for them – this would also encourage people to improve their ability to choose.
5. *Complex choice structuring* – since there are different strategies used to choose (trade-off is used when there are few options, f.i., while other methods, including some that can be misleading and hazardous, may be employed when there is a larger number of them, such as compensatory strategy, when the high value of one feature makes up for the lower one of another, or selection of priority, cutting off what does not reach these criteria, all trying to simplify the several dimensions involved, sometimes to the point of losing focus), choice architecture ought to be used to structure this process:
- the main point here is to help people to learn how to go about choosing so that later on they may do it on their own with better results.

Social influence is yet another major issue regarding change of behaviour and potential nudges, and it is so important because this is how humans learn – with the others around –, and this is how individuals and society develop. Therefore it ought to be particularly addressed by policy-making. Here are some basic types of social influence:

1. Information – if we believe that many people think or do something, we tend to understand that it would be best for us too;
2. Peer pressure – we tend to display herd behaviour because we do not wish to stand out (or at least not too much), so it is preferred to make mistakes along with other people rather than taking the chance to be right on our own;
3. Famous people can influence the public dramatically, as the latter tend to follow their advice and imitate their behaviour.

This is only an introduction to this discussion. Many other examples could be given – or created. Choice architecture is about human fallibility and it reminds us that offering financial education to the population may not be enough. Policy makers ought to go on debating regulations and other context designing if the aim is to provide decision-makers with better opportunities to make favourable choices (Beshears et al., 2008; Choi et al., 2005). In particular, it might be useful to calculate and compare costs and results, between conventional measures involving education on one hand, and simple devices such as sending reminders over mobile phones about the same issue, on the other, so as to have a more concrete view of the efficacy of each strategy – and continue evaluating both. One example could involve saving: every month, each person from the target population would receive three mobile phone messages reminding her that 1) she had planned to deposit some money in her savings account two days ahead, 2) two days later, that this is the day for actually depositing it, and 3) finally, the one checking whether the deposit was indeed made. Would something like this deliver better results than a formal campaign? These are the type of data that could be empirically found, measured and assessed for more precise policy designing.

Of course it seems that combinations of education and choice architecture would render even better results. One important concern is to actually have people learn and develop more mature attitudes and

behaviours, towards goals of autonomy and emancipation. We believe there is potential for further innovations and give one example below.

In the future – an interactive Museum of Economic Psychology to further develop financial education in Brazil and other countries

A museum can be described as a permanent institution focused on general interest and aiming at collecting, keeping, researching and treasuring in different manners items that have cultural value. It is associated to memory, cataloguing and collecting objects or concepts, as is the case with the Brazilian Museu da Língua Portuguesaⁱⁱ (Portuguese Language Museum), or other intangible items, like in the also Brazilian Museu da Pessoaⁱⁱⁱ (Museum of the Person), that collects ordinary people's life stories and testimonies in audio and video.

Modern museums currently rely on electronic technology to expand the scope of their collections, making them more accessible to visitors and in many cases, also interactive and in constant dialog with the public.

Economic psychology already has a consistent body of empirical data and solid literature, which allows for organising it in the shape of a modern museum. Such museum would gather information on psychological factors found in economic decisions made by citizens (consumers and investors), and by policy makers, initially as a website and eventually as a concrete physical location. The goal is to inform, raise awareness and engage users in developing tools to improve their decision-making processes, so emphasis would lay on systematic errors and the creation of antidotes to them, with data being displayed as sketches, brief explanations and speeches, in both audio and video forms, among others.

The collection would be permanently increased by users themselves as well as specialists, as they constantly added new information and data, keeping it alive, relevant and updated. Besides working as a tool for psychological-economic orientation for individuals and groups, it is also intended to become an embryo think tank, capable of producing contributions for debates around policymaking, with necessary adaptations so as to be also reproduced in different towns and communities.

The idea for this museum was originally devised at *OECD Brazilian International Conference on Financial Education*, organised by CVM-Comissão de Valores Mobiliários and OECD-Organisation for Economic Co-operation and Development, in December 2009, in Rio de Janeiro, when the Mexican representative (Germán Saldívar Osorio) mentioned that there was an Interactive Museum of Economics in Mexico^{iv}, that displays objects related to the area at a physical location, along with symposia, educational activities, and online alternatives as well.

Upon hearing him, one of the authors (Ferreira) associated it to the idea of the two Brazilian museums mentioned above, and began to work on the project for this museum that would bring together data from the already extensive research in the psychological-economic area to work as an interactive museum, aiming at building strategies to promote awareness, learning and change of behaviour, particular in the collective dimension and in that of policy-making. Over-indebtedness would be another important issue addressed here (Ferreira, 2008; Lea & Anand, 2007; Wrapson et al., 2007). Emphasis would of course lay on psychological factors, that are essential to any process of transformation, be it individual or social.

In summary, its goals would be to:

1. Protect individuals, groups and organisations from errors due to their own psychological limitations, as well as to appeals coming from frauds and marketing itself, while at the same time offering tools to better manage their economic decisions with responsibility and autonomy.
2. Disseminate warnings on psychological traps present in different aspects of economic behaviour, according to economic-psychological literature, and transmit them in mass scale.
3. Contribute to micro finance initiatives, adding the psychological perspective to the introduction of micro credit, savings, insurance etc. (Ferreira, 2008; Tufano & Schneider, 2008; Monzoni, 2008; Magalhães & Junqueira, 2007; Abramovay et al., 2004).
4. Encourage interactivity, exchange of ideas and experience among users/visitors, specialists and policy makers.
5. Become a think tank in the area, being able to provide content and strategies to reflect, debate and build alternatives to improve economic and financial decision-making, having government and non-government institutions as partners too.

Regarding the collection, that could be displayed using different electronic formats as support, such as text, photos, audio, video, simulators, and games, the museum could offer:

1. Basic notions on economic psychology/behavioural economics, decision-making and systematic errors, with short explanations and practical examples of heuristics and biases, on issues such as credit and debt, saving, investment, insurance, retirement, pension plans, consumption, environment etc.
2. Academic and scientific production.
3. Interviews, testimonies and stories told by users/visitors about economic management of their personal lives or experience with public finance and institutions.
4. "Antidotes" against systematic errors and excessive consumption and spending.
5. Examples of choice architecture.
6. Suggestions for policy-making.
7. Games, music, sketches and plays supporting the contents above.
8. Links for other relevant websites.
9. Research, debates and symposia.
10. The history of the field, comprehending economic psychology, behavioural economics and finance, neuroeconomics.

This project, that may have, among others, a foundation dedicated to research in finance and another one dedicated to consumer protection as possible partners, could also be the starting point for similar initiatives in other communities and countries, and all such museums could integrate a net for further reaching new levels of development and a greater number of visitors.

5. Conclusions

Education, awareness, empowerment, change of behaviour. The goals for financial education programmes are ambitious – and they need to be so if making a difference is intended. On the other hand, however, we have a great number of limitations, many of which seeming to be inherent to human condition. Can the puzzle be solved and financial capability acquired by significant portions of the population?

This is no easy job and perhaps the only way to go about it – and to learn from this experience – is to bring different perspectives and backgrounds together to cooperate and integrate, and closely observe this process so it is possible to correct eventual mistakes early on. One point may be clear though: if policy-making does not fully take mental functioning and all its unfolding into account, financial education programmes will hardly experience consistent efficacy. Here is one invitation to collaborate. We believe that financial education and economic psychology/behavioural economics have a promising partnership ahead.

Notes

ⁱ EARL, Peter E. “Behavioral Economics and the Economics of Regulation”. *Briefing paper* prepared for the New Zealand Ministry of Economic Development, 2005, p.11-12.

ⁱⁱ <http://www.museulinguaportuguesa.org.br/museudalinguaportuguesa/index.html>

ⁱⁱⁱ <http://museudapessoa.net/>

^{iv} <http://www.mide.org.mx/>

REFERENCES

- Abramovay, Ricardo (org.) *Laços financeiros na luta contra a pobreza*. São Paulo: FAPESP / Anna Blume, 2004.
- Akerlof, George & Shiller, Robert. *Animal Spirits – how human psychology drives the economy, and why it matters for global capitalism*. Princeton: Princeton University Press, 2009.
- Ariely, Dan. *Previsivelmente irracional*. Rio de Janeiro: Campus, 2008.
- Beshears, J., Choi, J.J., Laibson, D., Madrian, B., Weller, B. “Public Policy and Saving for Retirement: The “Autosave” Features of the Pension Protection Act of 2006”. Written for the “Better Living Through Economics” sessions at the *American Economics Association meetings*, January 4-7, 2008.
- Bion, Wilfred. (1961) “A Theory of Thinking”. In *Second Thoughts - Selected Papers on Psychoanalysis*, London: William Heinemann Medical Books Limited, 1967.
- _____ (1970) *Atenção e Interpretação – uma aproximação científica à compreensão interna na psicanálise e nos grupos*. Rio de Janeiro: Imago, 1973.
- _____ *Experiências com grupos*. Rio de Janeiro: Imago, São Paulo: Ed. da USP, 1975.
- Brasil. Coremec. *Educação Financeira nas Escolas – Ensino Médio*. 2010.
- Choi, J.J., Laibson, D. & Madrian, B. “Are Empowerment and Education Enough? Underdiversification in 401(k) Plans”. *Brookings Papers on Economic Activity*, 2, p.151-213, 2005.
- Earl, Peter E.; Peng, Ti-Ching; Potts, Jason. “Decision-rule cascades and the dynamics of speculative bubbles”. *Journal of Economic Psychology*, 28 (3): 351-364, 2007.
- Earl, Peter E. “Behavioral Economics and the Economics of Regulation”. Briefing paper prepared for the New Zealand Ministry of Economic Development, 2005.
- Ferreira, Vera Rita de Mello. “Psicologia Econômica: origens, modelos, propostas”. Doctoral Thesis, Programa de Estudos Pós-Graduados em Psicologia Social, PUC-SP. São Paulo, 2007a.
- _____ *Decisões econômicas: você já parou para pensar?* São Paulo: Saraiva, 2007b.
- _____ “The critical decision: a psychoanalytic contribution to the investigation of decision making”. *Proceedings of the 32nd IAREP Conference*, Ljubljana, Slovenia, 2007c.
- _____ *Psicologia Econômica – estudo do comportamento econômico e da tomada de decisão*. Rio de Janeiro: Campus/Elsevier, 2008.

- Ferreira, Vera Rita de Mello & Lima, Iran Siqueira. "Can Economic Psychology contribute to financial education and financial capability programmes? – A discussion on Brazilian projects". Proceedings of IAREP-SABE Conference – Economic Psychology, Behavioral Economics, Theory and Policy, Halifax, Canada, 2009.
- Finucane, Melissa L., Alhakami, Ali, Slovic, Paul & Johnson Stephen M. "The affect heuristic in judgments of risks and benefits". *Journal of Behavioral Decision-Making*, 13: 1-17, 2000.
- Freud, Sigmund. (1911-1976) "Formulações sobre os Dois Princípios do Funcionamento Mental". v.12, da Edição Standard Brasileira das Obras Psicológicas Completas de Sigmund Freud, Rio de Janeiro: Imago.
- _____ (1915) "O Inconsciente". Vol.14, idem.
- _____ (1921) "Psicologia de Grupo e a Análise do Ego". Vol.18, idem.
- Kahneman, Daniel & Tversky, Amos. "Prospect Theory: an analysis of decision under risk". *Econometrica*, 47 (2), 1979.
- Kahneman, Daniel. "Maps of bounded rationality: a perspective on intuitive judgment and choice". Prize lecture – Nobel Prize, Dec.8th, 2002.
<http://nobelprize.org/economics/laureates/2002/kahnemann-lecture.pdf>
- _____ "O Otimismo é Mau Conselheiro". *HSM Management*, 65 nov.-dez., p.1-5, 2007.
- Katona, George. *Psychological Economics*. New York: Elsevier, 1975.
- Klein, Melanie. (1963) "Nosso Mundo Adulto e suas Raízes na Infância". In *O Sentimento de Solidão – Nosso Mundo Adulto e Outros Ensaios*. Rio de Janeiro: Imago, 1985.
- Lea, Stephen E. G. & Anand, Paul. "The Psychology and Behavioural Economics of Poverty". Proceedings of the 32nd IAREP Conference, Ljubljana, Slovenia, 2007.
- Lea, Stephen E.G., Tarpy, Roger M. e Webley, Paul. *The individual in the economy*. Cambridge: Cambridge University Press, 1987.
- Lerner, Jennifer, Small, Deborah e Loewenstein, George. "Heart Strings and Purse Strings - Carryover Effects of Emotions on Economic Decisions". *Psychological Science*, 15 (5): 337-341, 2005.
- Loewenstein, George. "The Pleasures and Pains of Information". *Science*, 312, 704-706, 2006.
- Loewenstein, George & Haisley, Emily. "The Economist as Therapist: Methodological Ramifications of 'Light' Paternalism". In A. Caplin and A. Schotter (Eds.), "Perspectives on the Future of Economics: Positive and Normative Foundations", vol. 1 in the *Handbook of Economic Methodologies*, Oxford, England: Oxford University Press, 2008.
- Loewenstein, George, Weber, Elke, Hsee, Christopher & Welch, Ned. "Risk as feeling". *Psychological Bulletin*, 127 (2): 267-286, 2001.

- Magalhães, Reginaldo S. & Junqueira, Rodrigo G.P. Micro-finanças: racionalidade econômica e solidariedade social. São Paulo: Saint Paul, 2007.
- Monzoni, Mario. Impacto em renda do microcrédito. São Paulo: Peirópolis, 2008.
- Shiller, Robert. Exuberância irracional. São Paulo: Makron Books, 2000.
- Shiv, Baba, Loewenstein, George, Bechara, Antoine, Damasio, Hannah & Damasio, Antonio. "Investment Behaviour and the Negative Side of Emotion". *Psychological Science*, 16 (6): 435-439, 2005.
- Simon, Herbert A. "Rational decision-making in business organizations". Nobel Memorial Lecture.08.12.1978. *Economic Science* 1978. 343-371.
- Slovic, Paul. "Rational Actors or Rational Fools: Implications of the Affect Heuristic for Behavioral Economics". Paper presented as part of the lecture series commemorating the 10th anniversary of the Center for the Study of Rationality, The Hebrew University, Jerusalem, Israel; June 2002.
- Sunstein, Cass & Thaler, Richard. "Libertarian paternalism is not an oxymoron". Working Paper No. 03-2, The University of Chicago Law School, 2003.
- Thaler, Richard & Sunstein, Cass. *Nudge – Improving Decisions about Health, Wealth and Happiness*. New Haven & London: Yale University Press, 2008.
- Tufano, Peter & Scheider, Daniel. "Using Financial Innovation to Support Savers: From Coercion to Excitement". Working paper 08-075, 2008.
- Tversky, Amos e Kahneman, Daniel. "Judgment under uncertainty: heuristics and biases". *Science*, 185: 1124-1131, 1974.
- Van Raaij, W. Fred, Antonides, Gerrit & de Groot, I. Manon. "Financial Capability, Motivation and Behaviour". Proceedings of the 33rd IAREP/SABE World Meeting, Roma, 2008.
- Wärneryd, Karl-Erik. "The psychological underpinnings of economics: Economic psychology according to Gabriel Tarde". *The Journal of Socio-Economics* 37 (5): 1685-1702, 2008.
- Wrapson, Wendy, Mewse, Avril J. & LEA, Stephen E.G. "Social identity and attitudes in problem debt". Proceedings of the 32nd IAREP Conference, Ljubljana, Slovenia, 2007.

The Russia Financial Literacy and Education Trust Fund was established in 2008 at the World Bank with funding provided by the Ministry of Finance of the Russian Federation. The work supported by the Trust Fund is jointly managed by the World Bank and the Organisation for Economic Co-operation and Development (OECD) and is directed toward improving public policies and programs to enhance financial knowledge and capabilities in low- and middle-income countries. This effort has focused on the review of national strategies for financial education, the development of methods for the measurement of financial knowledge and capabilities, methods for evaluating the impact and outcome of programs, and research applying these methods to programs in developing countries. The products of this program of work can be found at the Trust Fund website at:

www.finlitedu.org

