

# What Behavioural Economics Has to Say about Financial Literacy<sup>1</sup>

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*Gaps in financial literacy are arguably responsible for significant errors in decision-making by consumers and investors alike. Unlike the conventional neoclassical economic wisdom, behavioral economics opens the analytical door to the significance of financial literacy for decision-making. This paper presents evidence on the importance of financial literacy as well presenting the different analytical approaches to financial literacy that flow from neoclassical economics and from the different methodological approaches to behavioral economics. Of particular importance is the errors and biases approach, which attributes much of financial illiteracy to the cognitive shortcomings of the human brain. Whereas the bounded rationality approach focuses on informational gaps (complex and asymmetric information), framing effects, institutional design problems, and human capital deficits (inclusive of experiential learning), as key to understanding documented gaps in financial literacy. The behavioral approaches have significant implications for analyses and public policy.*

**Keywords:** Financial literacy, behavioral economics, bounded rationality, errors and biases, framing, asymmetric information, trust, fraud, moral hazard, overconfidence, herding, anchoring

Financial literacy and its implications for the financial and economic wellbeing of the individual and society at large as well as for public policy has attracted increasing attention from governments, think tanks, and scholars throughout the world. The lack of financial literacy is now well documented and many experts and scholars hold financial illiteracy to be responsible for both household and macroeconomic financial crises and dilemmas. Surveys find that financial literacy is very low amongst individuals and households in OECD countries irrespective of income and education, but especially amongst groups with lower income and less education. Even experience in financial markets tends not to improve the level of financial literacy. Most people have difficulty answering questions about compound interest, inflation, or risk diversification, and difficulty understanding budgeting and saving programs (Altman, 2012; Lusardi and Mitchell, 2007; Munshaw, 2008; OECD, 2005; Yoong, 2010).

A standard working definition of financial literacy is the decision-maker having the capabilities and confidence to make responsible financial decisions. Capabilities typically refer to knowledge, transformed into skills, required to execute responsible financial decisions—the individual needs to be literate in financial matters. Confidence refers to the capability of making a decision, based on an adequate set of financial decision-making skills, even when social norms, peer pressure, and financial gurus, would suggest another set of decisions. Responsible financial decisions appear to refer to decisions that are consistent with maintaining or growing the financial integrity of the decision-maker's financial resources. But what is responsible is often defined from the perspective of the expert—what the expert believes is in the best interest of the decision-maker. Another definition of responsible relates to regret theory, very much part of the behavioural economics toolbox—financial decisions that the decision-maker will not regret given her or his decision-making environment.

Concerns about financial illiteracy are growing given the increasing complexity of financial products and the increasing importance of financial decisions made by households such as those related to saving for retiring, buffers against economic shocks, and investment in the education of one's children. Given the gaps in financial literacy and their purported negative impact on household wellbeing and macroeconomic economic outcomes, attention is being focused on financial education and improvements to the decision-making environment as possible key variables that can be modified to fix financial illiteracy rated problems. For example, the reality of financial illiteracy raises the possibility that improvements to education, quality information, and incentives might improve financial decision-making. By contributing to financial literacy, financial education contributes to more informed and effective decisions on financial matters such as contributions to pensions, use of credit cards, household budgeting, mortgages, and investing on the stock market. Improvements to relevant information, with a focus on quality (and truthfulness), make possible the effective use of financial education. Financial education and quality information go hand and hand, forming key ingredients to effective financial literacy.

But the well-documented gaps in financial literacy and the related errors in decision-making are inconsistent with the simplifying and often simplistic assumptions of much of contemporary and conventional economics. But such gaps are quite consistent with the empirics and theory underlying behavioural economics. And behavioural economics can provide explanations and possible solutions to economic and financial problems that relate to gaps in financial literacy. Conventional economics typically models individual-decision-making as if there are no gaps in financial literacy and presumes that this assumption will not significantly affect the accuracy of modelling predictions. The conventional wisdom presumes that decision-makers have the physiological and psychological capabilities, and are in an informational, governance, and social environment, that will allow them to make optimal decisions. And, it is further assumed that individuals will make optimal decisions. If the typical individual is so endowed, financial education can have little impact on improving choices. In effect, one might argue that in the conventional approach individuals either are assumed to be financially literate or that they make choices consistent with financial literacy. Moreover, the decision-making process is not important—what counts is the analytical prediction that individuals make decisions consistent with financial literacy.

A starting prior assumption of behavioural economics is that there is no good reason to expect individuals to behave in a manner prescribed or predicted by conventional economics. Too often the modelling assumptions made by the conventional wisdom are simplistic as opposed to simplifying, generating poor descriptions and analytical predictions of human behaviour and decision-making outcomes. Also, in behavioural economics, prediction is not the only analytical game in town. Causality is also of critical importance. And, this can be established if we can better understand and model the decision-making process and environment. This allows us to effectively move from correlation to causal analysis.

In terms of assumptions, for example, in the real world, contrary to conventional wisdom:

- Humans don't have the information processing capabilities assumed by the conventional wisdom—the brain is a scarce resource.
- Information is not only costly to acquire it is asymmetric.
- Information can be false or misleading, by itself generating errors in decision-making.
- Outcomes are uncertain so that individuals can't easily and correctly predict the future implications of current decisions.
- Individuals are influenced by how problems are framed, even if the frame appears, on the surface, not to change the substantive nature of a decision-making problem—for example, defaults make a difference, as does font size, and quality of advertisements.
- In a world of uncertainty and an imperfect decision-making environment individuals are influenced by the decisions and opinions of others, which generates follow-the-leader behaviour (herding)—yielding possible errors in decision-making.

Herbert Simon (1978, 1987; see also March, 1978; Gigerenzer, 2007), one of the founders of behavioural economics, makes the case that individuals tend to do their best given the physiological, psychological, and decision-making constraints that they face. He refers to such behaviour as satisficing as opposed to maximizing and boundedly rational as opposed to rational behaviour, where the latter does not take into consideration the reality of human decision-making. Such behaviour can be smart or intelligent, but is also consistent with possible errors in decision-making and with gaps in financial literacy.

There are two dominant methodological approaches to behavioural economics, which present different interpretations of gaps in financial literacy and, therefore, for errors in financial decision-making. They also provide different possible corrections for errors in financial decision-making. What I refer to as the Kahneman-Tversky, also referred to as the errors and biases approach, following upon the research of Daniel Kahneman (2003) and Amos Tversky (Tversky and Kahneman 1974, 1981), maintains that individuals all too often make systematic error-prone and biased decisions that are largely rooted in the hard-wiring of the brain. Basically individuals are, on average, imbued with innate cognitive biases such as:

- Overconfidence: individuals overestimate their decision-making capabilities.
- Herding: individuals mimic the behaviour of others as a decision-making short cut.
- Loss aversion: an emotional aversion to losses, as distinct to 'rational' risk aversion.
- Status quo bias and the endowment effect: Individuals show a preference for the status quo even when it does not yield higher levels of material welfare.
- Framing effect: where decisions are affected by how choices or prospects are framed.
- Anchoring: Individuals tend to anchor their choices to reference points that are not objectively relevant to the decision at hand.

These cognitive biases are closely related to the dominant role that emotions often play in decision-making and the use of heuristics or decision-making shortcuts. This, as opposed to well thought out calculation driven decision-making. Errors and biases occur when individuals deviate from conventional (neoclassical) decision-making rules. Education can have little effect on such behaviour. This approach is much more supportive of government policy that nudges decision-makers into making decisions that some might argue are in their best interest. Experts are assumed to know better than individual decision-makers what is in their best interest (Thaler and Sunstein, 2008; see also Camerer et al., 2003; de Meza, Irlenbusch, Reyniers, 2008; Shefrin, 2002).

What I refer to as the Simon-March (following upon the methodological contribution of Herbert Simon and James March) or the bounded rationality approach, argues that individuals are physiologically incapable of behaving as prescribed and predicted by conventional economic wisdom. As a result, they develop heuristics, or experience-based decision-making shortcuts, to make choices that are

rational (boundedly rational) even though they are often inconsistent with the conventional behavioural norms. So, what is often construed as biases by conventional economics and the Kahneman-Tversky approach to behavioural economics, is more often regarded as rational behaviour in the Simon-March approach, given the constraints the individual faces. But such rational behaviour can be sub-optimal. But it can also generate outcomes much superior to those based using conventional economics behavioural norms (see also Gigerenzer, 2007).

It is recognized that the typical choice environment is characterized by asymmetric information, incomplete information, and even false information and poor education. Both physiological and environmental constraints can, but need not, result in errors in decision making, such as relatively poor investment decisions and poor household financial management. Because choice environments can be changed, this approach provides a much stronger rationale for enhancing the quality of financial decision-making through improvements to financial education and the decision-making environment. This would include improved access to and improved availability of quality and pertinent information, appropriate decision-making rules and regulations, changing defaults, changing incentives (to mitigate moral hazard, for example) and appropriate financial education. Often, relatively optimal decisions would be a product of a combination of improvements of all of these variables. Simply improving one variable, such as financial education, will not do the trick. On the whole, individual preferences, which are regarded as multifaceted across decision makers, are respected and less attention is paid to nudging unless individual choices can be shown to cause social harm (see also Altman, 2012a, 2012b).

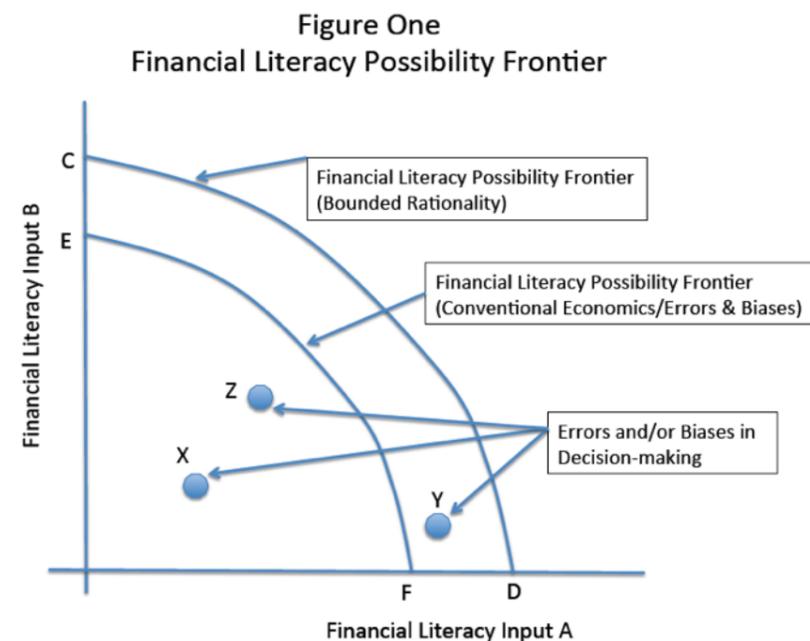
Some of the public policy implications of the Simon-March approach are illustrated in Table One.

Table 1 Behavioural Economics and Public Policy

	Public Policy Implications of the Simon-March (Bounded Rationality) Approach How to Improve Financial Decision-Making
Education	<ul style="list-style-type: none"> <li>• Financial education provides the means for individuals to make intelligent choices based on their preferences, incentives and the information at hand.</li> </ul>
Framing	<ul style="list-style-type: none"> <li>• Framing of financial documents and prospects should be designed so that bounded rational individuals are apt to understand these documents and prospects.</li> <li>• Font size should appropriate.</li> <li>• Location of key terms and information should easily located.</li> </ul>
Savings / Retirement planning	<ul style="list-style-type: none"> <li>• Changing defaults for investing in pensions.</li> <li>• Transparency on the risks and returns of default pension funds.</li> <li>• Transparency on whether there is a lender of last resort.</li> </ul>
Investing in financial assets	<ul style="list-style-type: none"> <li>• Transparency on the risks and returns of default pension funds.</li> <li>• Transparency on whether there is a lender of last resort</li> <li>• Reliable product labels for financial products.</li> </ul>
Fraud and trust	<ul style="list-style-type: none"> <li>• Moral education to reduce fraud.</li> <li>• Improved transparency of financial transactions.</li> <li>• Well-resourced regulators to increase the probability of detecting financial fraud.</li> <li>• Severe financial penalties for those convicted of financial fraud so that marginal costs clearly outweigh marginal benefits.</li> </ul>
Credit cards	<ul style="list-style-type: none"> <li>• Reliable product labels for financial products.</li> <li>• Easily identifiable and understandable contract clauses.</li> <li>• Interest rate policy should be easily understood by consumer.</li> <li>• Credit card policy changes should be easily recognized and understand by customers.</li> <li>• Defaults for credit limits should be to the advantage of the customers.</li> <li>• Key credit card terms and conditions should be verbally conveyed to consumers.</li> </ul>

The varied economic theory approaches to financial literacy are illustrated in Figure One. From the conventional neoclassical approach, one can map out what can be referred to as a financial literacy possibility frontier (AB) that yields optimal financial decisions. It's a product of various inputs, inclusive of financial education and decision-making heuristics, which are assumed to be at some optimal level controlling for quality. It is further assumed that decisions are made at this frontier. If not, market forces will assure optimal decisions in short order. From the errors and biases approach, individuals should ideally make decisions at this frontier, but all too often they do not. So many choices are plagued by errors and biases, pushing individuals to the interior of the frontier, such as at X and Z. Experts can nudge individuals to frontier consistent choices. Like with the errors and biases approach, in the bounded rationality approach

to behavioural economics individuals often make choices in the interior of the financial literacy frontier, but this is often due to gaps in financial educations, incentives, and overall decision-making environment. Moreover, this approach suggests that, what I would refer to as the 'true' financial literacy frontier (EF) lies above the conventional one (CD). This is because conventional decision-making processes are neither consistent nor well-aligned with the decision-making capabilities of the human brain, yielding inferior outcomes. Ceteris paribus, using more sensible decision-making processes shift the financial literacy frontier outward, yielding superior financial decisions. From this perspective an outcome at Y would be sub-optimal, yet it would be superior to anything deemed possible from the perspective of conventional financial literacy frontier.



Overall, behavioural economics opens the door to the improvement of decision-making through financial education and changes to the decision-making environment. These can be affected by public policy. The Simon-March approach to behavioural economics pays particular attention to how smart but non-neoclassical decision-makers are influenced by the quality of information and the decision-making environment. Formal financial education courses and seminars are not as important here as are the quantity, quality, and structure of information and its availability at low cost, as well as institutional parameters

that affect financial decision-making. But formal education instruments are important to enhancing the capacity of individuals to process and understand the information at hand.

It is these factors combined, and not simply formal financial education instruments, that have the most profound impact on financial literacy. Often financial education fails to deliver the goods because it can't affect the other variables critical to decision-making outcomes.

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## Notes

1. This short paper is based on a detailed analysis of the subject in Altman (2012).

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