

Behavioural Economics: Implications for the Savings Literature

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Introduction

In the last two decades, economics rediscovered its psychological roots. It now imports insights about the way people act from psychology at an enormous rate. The economics based on these insights, which is known as behavioral economics, is taught in most economics programs, and its practitioners include Nobel prize winners Daniel Kahneman, Thomas Schelling, George Akerlof, Vernon Smith, and Herbert Simon. A large body of detailed work exists, and several review articles and books have been written.¹

To date behavioural economics has been primarily empirical and microeconomic. Its approach has been to rigorously establish facts about the way people behave, and then build microeconomic models that incorporate these facts. The empirical work is typically based on experiments about how people behave when confronted with different economic situations, or on surveys about what people believe. These experiments are often played for monetary stakes, which are sometimes extraordinarily high. Increasingly, the results have been confirmed by neuroscientific investigations, involving tools such as functional magnetic resonance imaging and electroencephalograms (machines that trace the flow of electrical impulses and blood flow in the brain). These investigations show how the brain makes decisions, and how different decisions affect the brain. For instance, it has been shown that many people are motivated to cooperate on occasions when it is not in their direct interest because of the “brain pleasure” they get when they cooperate with people who have been cooperative with others.

The main focus of behavioural economics has been how individual agents make

choices. These choices depend not only on their innate preferences over different goods and services but on their preferences over when they do things, their preferences over other peoples' well-being, their attitudes towards risk, and the ways they evaluate probability and make judgements about the likelihood of different events.

Making Choice: Four Familiar Foibles

In assembling evidence about the way people make choices, behavioural economists have focused on the following subfields:

- (i) **Judgement:** the ways in which people actually calculate probabilities and use these probabilities to inform choices.
- (ii) **Reference points:** the ways people evaluate the value of different outcomes using reference points such as earlier levels of consumption.
- (iii) **Regret:** the way people gain happiness not just from the outcomes of their choices, but from whether or not they were responsible for these choices.
- (iv) **Intertemporal discounting:** the ways people discount future outcomes and how they solve time inconsistency problems.

(i) Judgement, Probability, and Asset Returns

There is a vast literature analysing how people estimate the probability that different events occur. Most of this evidence suggests we do it badly. Studies show that most people (including experts):

- consistently over-estimate the probability of rare events;

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¹ Much of the work in this paper is based on review papers, including Camerer and Loewenstein (2004), Camerer, Loewenstein and Prelec (2005), and Rabin (1996).

- consistently over-estimate the probability of events that have previously happened;
- consistently incorporate unrelated information that is in their heads (including random numbers) into their probability judgements; and
- consistently over-emphasise anecdotal information.

These faults are problematic for several reasons. First, they suggest that people are likely to have various biases when trying to forecast the outcome of future events. They might believe property prices will keep going up if they have recently been going up, for instance, or they may over-estimate the future inflation rate when the current inflation rate is high simply because the current inflation rate is on their mind. Secondly, asset price valuations are likely to be faulty, because they are based on incorrect probability distributions. People might over-estimate the probability that a firm will fail, for example. If people have difficulty valuing assets, they may prove to be rather poor investors even if they are good at saving.

It is sometimes argued that even if most people have difficulty assessing the future and valuing assets, these biases will not have important effects on asset prices if the dominant players in markets are more experienced people. However, several theoretical papers and some experimental research have made researchers less sanguine about the ability of experienced professionals to drive amateurs from the market. Rather, it turns out that the conditions under which professionals are likely to dominate amateurs are reasonably restrictive (DeLong, Shleifer, Summers and Waldman, 1990; Shleifer and Vishny, 1997; Fehr and Tryon, 2005). For this reason, cognitive biases can mean asset valuations can be driven away from fundamental values for long periods of time.

(ii) Reference Points

Most evidence suggests that people evaluate how much they will enjoy different levels of consumption (or wealth) with respect to a reference level. The reference level may be based on previous consumption levels ("habit formation"), other people's consumption ("keeping up with the Joneses"), or something else. Kahneman and Tversky (1979) showed that when people evaluate different consumption options relative to these reference points, people are much more concerned with losses than they are with gains. Indeed, they may even make the choice between a pair of outcomes differently if the choice is framed as a gain or a loss to their reference point.² For this reason, people are likely to avoid investments with high average returns but a high probability of losses because they are extraordinarily concerned that they may lose money they once had.

Most people choose different reference points when making different types of decisions. In particular, many people create different "mental accounts" into which they allocate different types of decisions, and these decisions are then evaluated using different reference points. Since people approach risk and spending quite differently in these different accounts, the way money is earned (for instance from wages or from investment earnings) may be an important determinant of how it is spent or invested. Consequently, for most people spending patterns depend not just on their total wealth, but the form in which this wealth is held. Policies that induce people to put money into one mental account (day-to-day spending) rather than another (savings) can have quite different effects. For example, savings may increase if too much tax is collected each week through the PAYE (Pay-As-You-Earn) system and then refunded at the end of the year, because the additional

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² For instance, people choose whether to undertake a dangerous operation differently if told it has a 95 percent success rate rather than a 5 percent failure rate.

weekly deductions come out of the “consumption” mental basket (and so reduce consumption) while the lump sum refund gets placed in the “saving” account.

(iii) Regret

More choice is not always good. Many people suffer considerable anxiety that they will make bad choices that they will live to regret, and then, if they do make bad choices, they suffer significant regret from these choices in addition to the bad outcomes they suffer. This means that for some choices, too many options are bad for people. Not only does a plethora of options raise the chances of making a bad choice, but it raises anxiety and may lead to regret. This is particularly true for choices that have important consequences but which require reasonable expertise, such as health and retirement savings (Lowenstein, 1999).

In these circumstances, there can be considerable gains for people if experts reduce the number of options available to them, or make their choices for them. This can significantly reduce the chance of making a bad choice, or lower the anxiety and regret associated with this decision. As Lowenstein notes, car manufacturers rarely offer consumers choices over the seatbelt retraction mechanism, even though they offer many options for engine power and various cosmetic extras. This is because there is little likelihood someone would improve on the expert choice, and considerable likelihood that providing extra options would confuse the buyer (and sometimes prevent the sale, as it becomes too hard to make a decision).

In terms of compulsory or subsidised retirement saving, a strong case can be made that people should be offered a relatively small variety of options, including an expert-structured default option. This is likely to improve average returns, increase uptake of subsidised

schemes, and reduce the psychic regret that may further worsen the poor outcomes that occur if someone invests in a fund with low returns.

(iv) Intertemporal Choice, Time Inconsistency, and Saving

Because interest compounds exponentially through time, most economists have assumed that people discount the value of future consumption exponentially through time: that is to say, if a person values spending \$100 today the same as spending \$102 in one year simply because they have to wait a year, then \$100 spending today will have the same value as spending \$104 in two years. This proves to be a poor description of how people value future outcomes. Rather, empirical evidence suggests people discount the future using “hyperbolic” preferences in which they place a high premium for immediate consumption, but have low discount rates for events a long time into the future (Laibson, 1997).³ For example, many people when offered a choice of either \$100 today or \$120 in seven days’ time will choose the \$100, but almost nobody prefers \$100 in 100 days’ time to \$120 in 107 days’ time. These preferences generate a *time inconsistency* problem. When people evaluate whether they want to do something which involves a long period of costly actions but has a large benefit at the end, they may judge that the benefits outweigh the costs, but they face the temptation to delay the costly action required today. This means that many things people believe are worth doing in the long run do not get started, as they keep procrastinating.

Economists such as Schelling (1984) have argued that time inconsistent preferences are a central problem facing most people’s lives, with widespread implications. When someone’s long term and short term preferences are not aligned, making

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³ Formally, if $\delta(t)$ is the discount rate for consumption in t years, $\delta(t) = 1/(1+kt)$

a decision over a course of action involves a battle of “self-command” between temporally distinct versions of the same person – or, as Ainslie argues:

Looking at the long view, he may want to be generally thin, brave and prudent, but to accomplish this he will have to overcome strong desires for food, escape and financial abandon in the immediate future. Ulysses and the Sirens will not be a remote fantasy, but a central problem of life. (1991, pp. 335)

While people may have time inconsistent preferences, most people find strategies to offset the tension between their short term desires and their long term desires. These strategies can take several forms, for instance:

- only adopting plans which will be adhered to because they are time consistent;
- undertaking precommitment strategies to rule out some future options; and
- adopting simple and habitual rules of thumb to avoid short term temptations.

Most societies have developed institutions (rules or norms) that help people overcome the temptation to overindulge or spend too much. These rules are typically taught to children and teenagers, and those who don't learn them are labelled “spendthrifts” or “wastrels” (Strotz, 1955). For this reason, the key issue is not whether or not most people have hyperbolic preferences, for the evidence suggests they do, but the ways that people organise their lives to achieve their long term goals in spite of them.

One of the first applications of behavioural economics has been to explain why many people consistently report that they are saving less than they would like.

Behavioural economists argue that time inconsistency is the main reason why people say they save less than they want, because they always want to start next week. A long series of one week delays leads them to miss their savings objectives. Consider the following quote:

A 1997 survey by Public Agenda finds that 76 percent of respondents believe that they should be saving more for retirement. Of those who feel that they are at a point in their lives when they “should be seriously saving already”, only 6 percent reported being “ahead” in their savings, while 55 percent reported being “behind” ... These findings echo a 1993 Luntz Webber-Merrill Lynch survey of baby boomers (that is, consumers between the ages of twenty-nine and forty-seven). Respondents were asked, “What percentage of your annual household income do you think you should save for retirement? (‘Target Saving’); and then “What percentage of your annual household income are you now saving for retirement? (‘Actual Saving’). The median reported gap between target and actual saving is 10 percent, and the mean gap is 11.1 percent; 77.2 percent of respondents believe they are saving too little for retirement, and 70.7 percent believe the shortfall represents at least 5 percent of income. Only 4.7 percent of respondents report that they are saving above their target rate. (Laibson et al., 1998, pp. 94–5)

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In its simplest version, the argument that people save less than think they should because they have time inconsistent preferences relies on people either not recognising their time inconsistency problem, or not having the means to respond to it. However, this is overly naïve, as the means to respond to it is quite easy: all they need is a way of being forced to accumulate savings each week.

For example:

- they could have an automatic salary deduction that is used to purchase an illiquid asset. If it is expensive to sell the asset, then agents will not be tempted to sell in order to increase immediate consumption; or
- they could borrow up to a liquidity constraint to purchase an illiquid asset. The need to make interest payments or face default also corrects the desire to spend immediately.

In general, when a variety of financial products are available, time inconsistency problems can be overcome when they are recognised.

In more sophisticated treatments of the hypothesis, whether or not time inconsistency problems are overcome depends on the profitability of supplying products that overcome time inconsistency issues, and the profitability of exploiting time inconsistency. This is well understood by marketers, who often offer sophisticated strategies to exploit their target audiences.⁴ It follows that the truth of the hypothesis will depend on the relative profitability of supplying savings products and supplying temptations (Glaeser, 2004).

The time consistency problem has several implications for savings behaviour.

- Compulsory saving schemes (including the mandatory pay-as-you-go tax-paid national superannuation scheme in New Zealand) will raise the welfare of people who otherwise haven't figured out how to overcome time-inconsistency issues.
- Some people will pay a premium for illiquid financial products to prevent them from spending their savings.
- Some people deal with these issues by having special accounts (saving

accounts) that they treat completely differently to normal income and consumption accounts. If so, money is not fungible, as high investment earnings in these accounts have little effect on current spending.

- Recent changes in financial technology that increase the liquidity of assets or increase borrowing power could potentially lower saving below desired levels by making it harder for individuals to overcome self-control problems.

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Discussion

When considering the extent to which governments should make interventions aimed at helping people save for their retirement, a key framing issue is whether a government believes:

- (a) that people on the whole are saving enough that they are unlikely to look back and regret the amount they saved; and
- (b) that the private sector makes it relatively easy for people to solve the “saving problems”: that they save enough and invest appropriately.

Governments around the world intervene to help people save for retirement out of concern that people don't save as much as they would like, and that people invest badly. Typically, they approach the “saving problems” by forcing people to pay tax and providing them pensions, and by subsidising savings. This approach is largely based on the ideas that:

- (a) a large fraction of people will solve the problems badly if left to their own devices;
- (b) the government can aid them by forcing them to save (in part by paying taxes) and by providing subsidies to offset a tendency to undersave; and

⁴ For example, because people like to limit consumption of “sin” goods such as chocolate, marketers sell them in small expensive packets. To sell large packets, a steep discount must be offered, to overcome consumers' reluctance to buy items over which they believe they will lose self-control. This is not true for liquid ammonia cleaning fluid. It follows that you get steeper discounts for bulk packages of “sin” goods than you do for cleaning fluid.

- (c) the government can provide products that are not well supplied by the private sector (such as annuity-style pensions that are paid for the whole of a person's life), or require them to invest in products which have a return that is better than the return that many people would achieve if they invested themselves.

In general, behavioural economics has provided a much stronger theoretical basis for why government interventions may be justified. It is able to explain a lot of observed microeconomic behaviour in terms of a few core features of the way that people actually behave: about the way they form judgements and frame problems, about what they care about, and about how they value the future. In each case, the hypotheses about how people behave are based on tightly controlled empirical work. This work suggests economic analysis based on the argument that most people are good at solving the saving and investment problems is incorrect.

The observation that people are wired in a way that makes saving and investment difficult is not by itself an observation that justifies government intervention. Societies have adopted behavioural norms to guide people how to save and invest, and private sector institutions exist that help achieve their saving goals. Nonetheless, most governments have taken the view that additional assistance is required. The mix of interventions depends on the government's views as to the benefits as well as the costs of each intervention. This is appropriate, assuming, of course, that the evaluation is based on an accurate understanding of how people actually behave, not how we think they should behave.

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