

Implications of behavioural economics for regulatory reform in New Zealand

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Summary

Neoclassical economics, which assumes rationality and self-interest, has helped analyse many regulations. But a growing body of evidence about judgements, decisions, and preferences casts doubt on the applicability of these assumptions. Drawing on this evidence, behavioural economics can now supplement neoclassical economics in regulatory analysis.

Many regulations in New Zealand are more easily reconciled with behavioural economics than with neoclassical economics. Delays preventing impulsive decisions are part marriage and divorce laws, and the right to change one's mind is part of the laws governing borrowing and door-to-door sales. Problem gamblers can ban themselves from casinos, and employees are automatically enrolled in KiwiSaver. Simple and sometimes emotionally powerful information disclosure is used to discourage smoking and guide investment decisions. Behavioural economics also suggests other areas where carefully chosen default options, simpler and more powerful information disclosure, or devices that facilitate self-control may be useful. At the same time, it strengthens concerns that regulations may fail to achieve their intended effects and doesn't change the principle that regulatory decisions should be made only after careful weighing of costs and benefits.

Yet behavioural economics also raises problems for the weighing of costs and benefits. Traditional cost-benefit analysis measures costs and benefits by reference to people's choices, but to the extent that those choices are internally inconsistent or premised on mistaken beliefs, choice is a questionable basis for policy. In response, some researchers propose trying to separate mistaken and inconsistent choices from those that reflect preferences, while others propose basing cost-benefit analysis on measures of experienced well-being, and still others propose using traditional cost-benefit analysis despite the flaws in its foundations.

Because behavioural economics underscores problems with instinctive judgements, it helps justify rules that encourage deliberation before regulations are made. It also suggests ways of improving regulatory decisions, such as the use of de-biasing training, regulatory premortems, early and informal reviews of regulatory proposals, and checklists of questions for assessing proposed paternalistic regulations. Lastly, by undermining neoclassical economic theory without offering an alternative of similar scope, it adds weight to calls for more empirical testing of proposed and existing regulations.

Caveat emptor, we declare, let the buyer beware. This is a policy that presupposes that the buyer is rational enough to see through the blandishments of the seller, but since we know better than to believe this myth taken neat, we go on to endorse a policy of *informed consent*, prescribing the explicit representation in clear language of all the relevant conditions for one agreement or another. Then we also recognize that such policies are subject to extensive evasion—the fine-print ploy, the impressive-sounding gobbledygook—so we may go on to prescribe still further exercises in spoon-feeding the information to the hapless consumer. At what point have we abandoned the myth of ‘consenting adults’ in our ‘infantilizing’ of the citizenry?—Daniel Dennett (2003, 270).

Introduction

1. The traditional approach to economics, which assumes that people are rational and generally self-interested, has proved fruitful for the analysis of regulation². For example, the theory of externalities and the theory of transaction costs help analysts examine the problem of pollution and assess whether regulation is desirable. Advances in the economics of information help assess whether it is better to tackle pollution by means of taxes or quotas and, when quotas are preferred, to design markets in those quotas. Likewise, the theory of games and the theory of industrial organization make it possible to compare monopoly, oligopoly, and competition, and to estimate the welfare effects of price control and restrictions on mergers and acquisitions.

² ‘Regulation’ is used here in the broad sense favoured by economists to refer not only to the instruments that lawyers call ‘regulations’ but also to Acts of Parliament and other rules made by government. See Scott *et al.* (2009, 32) and *The Regulations (Disallowance) Act 1989*, section 2.

2. Yet there are problems with the assumptions of rationality and self-interest that limit the value of neoclassical economics³ in the analysis of regulation. There is now a large body of evidence that shows that we are sometimes predictably irrational. It's not just that we are imperfectly informed (which is after all rational, given the costs of information), but that we are biased and inconsistent. Psychologists have demonstrated, for example, that we make predictably poor judgments about risks: that we systematically overestimate the probabilities of some kinds of events and underestimate those of others. They have also shown that our decisions are influenced by things that shouldn't matter. For example, we can make one choice if we are encouraged to evaluate our options as gains relative to a bad state of affairs, and another choice if we are encouraged to evaluate the same options as losses relative to a better state. Psychologists and economists have also found that our preferences change in a way that makes us inconsistent over time. We have a bias toward the present, which means that even if we want to save and diet we prefer to start tomorrow.

3. Nor are we always self-interested. We are sometimes more cooperative and sometimes more vengeful than we would be if we were purely self-interested. We also care much more about keeping up with the Jones. In general, our preferences are often 'other-regarding'.

³ The best term for this kind of economics is unclear. 'Rational-choice economics' (Posner 1998, 1551) has the virtue of being clear, but it is not common. 'Standard' or 'mainstream' are other possibilities, but what is standard or mainstream changes over time. 'Neoclassical economics' is sometimes used to refer to economic analysis that assumes perfect information as well as rationality and self-interest. It is used here more inclusively to refer to economics that allows for imperfect information but assumes rationality and self-interest.

4. In response to this evidence, a new field of research called ‘behavioural economics’⁴ has emerged, which studies the ways in which people deviate from rationality and simple self-interest and investigates the implications of these deviations for markets and public policy. The field, which draws mainly on psychology but also on sociology and neurology, is controversial, and how successful it will be remains unclear. Although experiments have demonstrated that behaviour sometimes deviates systematically from rationality and self-interest, it is unclear how large or widespread or enduring the deviations are in ordinary economic settings. It is also unclear how well behavioural economists will be able to explain people’s behaviour with models that retain some of the simplicity and scope of neoclassical economics. Nevertheless, behavioural economics is by now an established part of economics.⁵

5. In neoclassical economics, regulation serves to fix market failures. For example, it can reduce air pollution and other negative externalities when transaction costs mean that people cannot easily negotiate among themselves to solve the problem. But in neoclassical economics regulation is not needed to protect people from their own decision-making flaws or from firms that exploit those flaws. Consumers may make mistakes, but the mistakes are

⁴ The name ‘behavioural economics’ is problematic, because neoclassical economics also seeks to explain behaviour. An alternative that is sometime used is ‘psychology and economics’. Economic psychology is a longstanding closely related field of psychology (e.g., Earl and Kemp 2002).

⁵ Camerer et al. (2003) note that behavioural economics may prove to be a natural step in the development of economics. The simplest economic assumptions are that markets are perfectly competitive and that people are perfectly informed and perfectly rational. Much progress has already been made exploring imperfect competition and imperfect information. The next frontier may be imperfect rationality.

random, not systematic, and tend to be corrected over time. There are market failures and government failures, that is, but no 'consumer failures'. By contrast, behavioural economics allows for the possibility that paternalistic regulations may be valuable, as well as identifying new sources of externality.

6. On the one hand, behavioural economic provides support for existing regulations whose rationale is apparently paternalism, such as mandatory delays before marriages and divorces, and cooling-off periods during which consumers can change their minds about loans or purchases from door-to-door salesmen.^{6 7} It also strengthens the case for regulations whose rationale is probably a mix of paternalism and concern for negative externalities, such as requirements that motorcyclists wear helmets

⁶ See *KiwiSaver Act 2006* (section 9), *Credit Contracts and Consumer Finance Act (2003)*, (section 27), *Door to Door Sales Act 1967* (section 7), *Marriage Act 1995* (section 24), and *Family Proceedings Act 1980* (section 39).

⁷ It is difficult to know exactly what the rationale is for many consumer-protection regulations in New Zealand. A recent textbook on consumer law in New Zealand (Bevan, Dugan, and Grainer 2009), for example, asserts that the need for such regulations is obvious, but doesn't argue for them (e.g., pp. 21, 44, 330, 481). An earlier textbook on the same subject (Tokeley 2000, ch. 1) does provide an argument for consumer protection, but the argument relies on neoclassical economics and is unsatisfactory. Consumer protection is said to be necessary because consumers and large firms have unequal bargaining power, which in turns stems from imperfect competition and imperfect information. Yet imperfect competition is neither necessary nor sufficient justification for the consumer-protection laws that the book discusses. It is true that imperfect competition can justify price control and restrictions on mergers and acquisitions, but these regulations are beyond the scope of the book. Moreover, consumer-protection problems may arise even in markets with numerous suppliers: a study in the United States concluded that credit-card holders were getting a poor deal despite the presence of some 4,000 suppliers (Ausubel 1991). Imperfect information may justify some kinds of information-disclosure regulation, though not necessarily the kinds that are designed to protect consumers, but it does not justify mandatory cooling-off periods.

and restrictions on the sale and marketing of cigarettes and alcohol. To take a different kind of example, behavioural-economic analysis of preferences for relative position helps justify regulations that slow the ‘arms race’ among consumers, such as those that prescribe minimum periods of annual leave.

7. On the other hand, behavioural economics also offers ideas for modifying regulations. If people are poor at understanding complex information, information-disclosure regulations should probably prescribe very simple disclosures and possibly emotionally powerful ones. If people left to themselves save or insure too little, perhaps regulation should make some savings and insurance compulsory. If present bias causes people to behave impulsively in ways they come to regret, perhaps regulation should encourage more cooling-off periods between impulse and execution, such as delays between an initial decision to gamble at a casino and the ability to do so.

8. Behavioural economics may also help make non-paternalistic regulations more effective. Neoclassical analyses of regulation emphasize the role of taxes, quotas, and minimum or maximum prices. The surprising effectiveness of ‘nudges’—small changes that affect behaviour without altering prices or imposing quotas—suggests that more use might be made of advertising, changes in defaults, and other soft approaches.

9. Although behavioural economics helps justify some regulations, its implications are far from settled. It doesn’t necessarily imply more regulation. First, officials, politicians, regulators, judges, and juries are undoubtedly affected by biases, so behavioural economics provides new reasons to be concerned about regulatory failure—that is, about the risk that regulation will

fail in practice to make things better even though the right regulation properly enforced would. Second, to the extent that nudges and other soft approaches are effective, there is less need for regulatory coercion. Third, other-regarding preferences can sustain social norms that generate good behaviour even in the absence of legal rules requiring that behaviour. Indeed, behavioural economics has brought to light a new kind of regulatory failure: when people are inclined to cooperate to solve problems, the imposition of imperfect regulations can sometimes make matters worse. Finally, because behavioural economics suggests that consumers may demand too little of some services, such as savings products, it implies that governments should be wary about reducing the supply of these products by imposing regulations that are costly to comply with.

10. Because decisions made after deliberation are likely to be less biased than gut reactions, behavioural economics helps justify procedural rules that prevent hasty regulation, such as requirements for regulatory impact analysis. It also suggests ways in which those procedures might be improved, including the use of checklists, and regulatory premortems, and early informal regulatory reviews.

11. Lastly, behavioural economics calls into question traditional cost–benefit analysis, the standard economic tool for judging whether the outcomes produced by a regulation are desirable. Traditional cost–benefit analysis assumes that regulations are good to the extent that they generate outcomes that people would choose. For example, antipollution regulation is justified if, in a hypothetical world without transaction costs, those who suffer from the pollution would be willing to pay polluters enough to persuade them to stop polluting. But if choices are

sometimes poorly informed and sometimes simply incoherent, standard cost–benefit analysis loses its rationale. Judgements about policies may need to be based on something else.

12. This paper investigates the implications of behavioural economics for regulation in New Zealand. It argues that behavioural economics should be taken seriously by those involved in the design of regulation (section 1) and gives examples of existing regulations and possible regulatory changes that find some support in behavioural economics (section 2). It doesn't, however, attempt the comprehensive analysis that would be needed to make recommendations. It also explores how regulations should be judged if people cannot be assumed to be rational and considers whether paternalism is sometimes justified (section 3). Lastly, it argues that behavioural economics supports rules that require regulatory impact analysis and it makes suggestions for improving the process of analysing regulation (section 4).

The case for taking behavioural economics seriously

13. To begin with, it's important understand how behavioural and neoclassical economics differ. In particular, what exactly are the assumptions of rationality and self-interest?

14. Rationality implies first that our preferences are internally consistent. For example, if we prefer A over B and B over C then we prefer A over C.⁸ To give the assumption of internal

⁸ Preferences are also assumed to be complete, which means that for any two options a decision maker is either indifferent between the options or prefers one to the other. The link between rationality and completeness and transitivity is strong enough that the term 'rational' has been used to refer to

(continued)

consistency some bite, it is also assumed that preferences are stable over time. In the extreme, people are assumed to have constant lifetime preferences over their lifetime consumption paths (Bernheim and Rangel 2007).

15. Rationality doesn't imply having perfect information, but it does imply making good use of available information. When faced with uncertainty, for example, people are assumed to correctly update their estimates of probabilities in the light of new evidence.⁹ In strategic situations, they are assumed to be able to put themselves in others' shoes and to carry out chains of reasoning of the form: he knows that I know that he knows that I know ...¹⁰

16. People acting according to internally consistent preferences can be described as maximizing their utility, which might suggest that rationality implies the pursuit of self-interest. But this is a

any mathematical relation that is complete and transitive (see Corbae, Stinchcombe, and Zeman 2009, 39).

⁹ In modeling decisions under uncertainty, probability estimates are assumed to be updated according to Bayes rule, which says that if the prior probability of an event A is denoted by $\Pr(A)$, the probability conditional on some new evidence E is given by

$$\Pr(A|E) = \frac{\Pr(E|A)\Pr(A)}{\Pr(E)},$$

where $\Pr(A|E)$ is the probability of A conditional on E , $\Pr(E|A)$ is the probability of E conditional on A , and $\Pr(E)$ is the unconditional probability of the evidence E .

¹⁰ Precisely defining rationality is difficult, which makes it hard to draw a precise boundary between neoclassical and behavioural economics. Indeed, some work by economists in the neoclassical tradition is motivated by a view that some people are 'less rational and calculating' than others (Salop and Stiglitz 1977, 493).

confusion caused by the word ‘utility’.¹¹ In this technical sense of the word, the most altruistic person can be described as maximizing her utility. Neoclassical economic theory is consistent with any kind of preferences, so long as they are internally consistent.¹²

17. Yet many critics believe that neoclassical economists assume that people are selfish. The Ministry of Economic Development (2006, 4–5) has written that ‘The traditional (core) neoclassical assumptions include’ an assumption that ‘[a]ll individuals act in complete self-interest to maximise their own welfare and their decisions are not influenced by the welfare of others.’¹³ This isn’t true, but it isn’t far from the mark for many applications of the theory, in which simple assumptions must be made about people’s preferences in order to derive predictions.¹⁴

¹¹ A person whose preferences are complete and transitive can be represented as maximizing a mathematical function. That function is conventionally called a ‘utility function’, but the name of the function implies nothing about the content of the preferences.

¹² As David Hume said, ‘Tis not contrary to reason for me to chuse my total ruin, to prevent the least uneasiness of... [a] person unknown to me (1739–1740). And as two game theorists recently wrote, ‘Our methodology remains unchanged whether our players are Attila the Hun or St Francis of Assisi. We simply recognize that they have different tastes by writing different numbers in their payoff matrices’ (Binmore and Shaked 2010, 98).

¹³ Henrich et al. (2004, 8) refer to the existence of a ‘selfishness axiom’ in neoclassical economics.

¹⁴ In the words of the distinguished neoclassical economist, George Stigler (1981, 190), ‘the hypothesis’ is that ‘we live in a world of reasonably well-informed people acting intelligently in pursuit of their self-interests’—though Stigler assumed that self-interests could include the welfare of a person’s family and ‘a narrow circle of associates’ (189). In the nineteenth century, Edgeworth (1881, 16) said, ‘[t]he first principle of Economics is that every agent is actuated only by self-interest’. In a recent blogpost, Caplan (2010) wrote, ‘textbooks love to claim that economics assumes “optimizing behavior,” not self-interest. But whenever economists do

(continued)

18. It is not that any economist believes that people are perfectly rational or perfectly selfish.¹⁵ But analysis requires simplifying assumptions, and many have judged that any loss of realism implied by these assumptions is more than offset by the gain in the scope and simplicity of the theory. And the assumptions are typically applied with some care; no one thinks it useful to model chess matches as played by people with perfect information-processing powers, since such players would know how each game ended before it began. Moreover, as Friedman (1953) observed, a theory is tested not by armchair consideration of the realism of its assumptions, but by the empirical success of its predictions compared with those of alternative theories.

19. By now, however, there is much empirical evidence that theories built on the assumptions of rationality and self-interest often fail to predict behaviour well, and that behavioural-economic models are more successful than neoclassical models in some domains. It would be wrong to say that neoclassical economics was no longer useful. There are domains in which it works well. (Hence, the joke that Vernon Smith got the 2002 Nobel Prize for showing that economics worked in the lab, while Kahneman got it for showing that it didn't.) Moreover, although behavioural economists have developed models that attempt to explain particular aspects of behaviour, such as simple choices under

applied work, they quickly slide to self-interest ... [b]ecause although people aren't perfectly selfish, they're shockingly close.'

¹⁵ Indeed, several prominent economists outside the tradition of behavioural economics have criticized the assumption of rationality. Coase (1984, 231) writes, 'Most economists make the assumption that man is a rational utility maximizer. This seems to me both unnecessary and misleading. I have said that in modern institutional economics we should start with real institutions. Let us also start with man as he is.'

uncertainty or over time, the models do not have anything like the simplicity and scope of neoclassical models. Yet the evidence does suggest that behavioural economics should be taken seriously by those interested in regulation. The evidence for irrationality and other-regarding preferences in certain domains is strong, and a theory that predicts behaviour reasonably well in a particular domain may be useful to policy makers, even it doesn't have the scope of neoclassical economics.

20. The evidence considered here relates to¹⁶

- Poor use of information,
- Overconfidence,
- Susceptibility to framing,
- Lack of self-control, and
- Other-regarding preferences.

Poor use of information

21. Psychologists have found that we form many judgements by using simple rules of thumb, or heuristics, which often serve us well but sometimes lead us astray. As an example, consider an early experiment by Tversky and Kahneman (1974). They asked

¹⁶ There are many much more comprehensive compendiums of evidence. Kahneman, Slovic, and Tversky (1982) is a collection of research on heuristics and biases in judgment. Kahneman and Tversky (2000) is a collection on biases in decision making. Thaler (1993) is collection of articles on 'anomalies'—that is phenomena inconsistent with neoclassical economic theory—which first appeared in the *Journal of Economic Perspectives*. Camerer, Loewenstein, and Rabin (2003) is a collection of articles on behavioural economics. DellaVigna (2008) is a review of behavioural economics that highlights evidence from the field, not the lab. Dawes and Thaler (1998), Gintis et al. (2005), Henrich et al. (2004), and Croson (2008) discuss other-regarding preferences.

subjects to estimate the percentage of states in the United Nations that were in Africa. Before asking, however, they spun a rigged wheel of fortune that came to a halt on either the number 10 or the number 65. Then they asked whether the percentage was higher or lower than the number revealed by the wheel of fortune. On average, subjects who saw the number 10 estimated the percentage to be 25, while subjects who saw the number 65 estimated it to be 45. It seems that the number they saw served as a kind of anchor from which their estimate could drift only so far. Subsequent studies confirmed the existence of this phenomenon of anchoring and insufficient adjustment.¹⁷

22. A more recent study by Ariely, Loewenstein, and Prelec (2003) suggests that anchoring affects markets. They asked subjects to bid for items whose precise market value was unlikely to be known, such as bottles of French wine. But first they asked the subjects to write down the last two digits of their social-security numbers and to consider whether the value of the item was greater or less than those two digits considered as dollars. Those whose last two-digits made up a relatively big number ended up owning a disproportionate amount of the merchandise.

23. As well as using irrelevant information, we sometimes make poor use of relevant information. For example, we aren't good at using diagnostic tests to estimate the probability that a patient has a disease. In particular, if we know a test is highly accurate, we tend to think that a positive result very likely means that the disease is present, forgetting that if the disease is rare there

¹⁷ Tversky and Kahneman (1974) also discusses the availability and representativeness heuristics. See also Kahneman, Slovic, and Tversky (1982).

will be many false positives.¹⁸ In a more dramatic example of the same tendency to underweight underlying probabilities, we will sometimes guess that a person is more likely to be a feminist bank teller than a bank teller (Tversky and Kahneman 1984). In still other cases, however, we fail to update our estimates of prior probabilities in the light of new evidence as much as we should (Edwards 1982).

Overconfidence

24. Many other studies find that we have too much confidence in our abilities and in our judgements about difficult questions. On average, we consider ourselves better-than-average drivers (Svenson 1981). If we're CEOs, we launch takeover bids in search of illusory synergies (Roll 1986). If we invest in the stock market, we think we can do better than the average investor. It may be worse if we're male. Using data for nearly 38,000 US households, Barber and Odean (2001) found that equity investors traded too much for their own good. They would have earned higher returns, that is, if they had simply bought and held their shares. Women's trading reduced their net returns by 1.72 percentage points a year.

¹⁸ Suppose, for example, that a diagnostic test is such that 90 per cent of those who have the disease test positive and 96 per cent of those who do not have the disease test negative. Suppose further that 1 per cent of the population has the disease. The probability that a randomly selected person who tests positive actually has the disease is only 19 per cent. This can be seen using Bayes' rule. The probability of having the disease (D), as opposed to not having it (N), given the evidence of the test (E), is given by

$$\begin{aligned}\Pr(D|E) &= \Pr(E|D)\Pr(D) / (\Pr(E|D)\Pr(D) + \Pr(E|N)\Pr(N)) \\ &= (.90)(.01) / ((.90)(.01) + (.04)(.99)) = .185\end{aligned}$$

Men's more frequent trading reduced their net returns by 2.65 percentage points a year.

25. Psychologists have assessed overconfidence in belief by asking people to state their confidence intervals for the answers to each of a set of questions. For example, they might ask, 'What is the length of the Nile? Specify an interval that you're 98 percent sure the true length lies within.' A possible answer is 3,000 kilometres plus or minus 1,000. Asked 100 such questions, we ought to get about 98 right, however much or however little we know about the subject. But we typically get only 60 to 70 right. Events we judge impossible happen about 20 per cent of the time. Curiously, however, we actually have too little confidence in our answers to very easy questions.¹⁹

Susceptibility to framing

26. Other studies have found that we change our choices in predictable ways according to the way the choice is framed, even though the substance of the choice remains the same. For example, consider a choice between two gambles, one that offers a high probability of winning a low prize, another that offers a low probability of winning a high prize. When asked to choose between the two gambles, we tend to pick the high-probability low-prize one. But when asked how much we are willing to pay to play the gambles, we tend to offer more for the low-probability high-prize one. When considering our willingness to pay, we seem to emphasize the prize, which is measured in the same units as

¹⁹ See Lichtenstein, Fischhoff, and Phillips (1982), Griffin and Tversky (2002), and Camerer (1995, 591).

willingness to pay, whereas no such effect influences our choice between the gambles. As a result, our preferences are internally inconsistent.²⁰

27. Other preference reversals are associated with change in the reference point against which options are assessed. Kahneman and Tversky (1981) asked subjects to ‘Imagine that the U.S. is preparing for the outbreak of an unusual Asian disease, which is expected to kill 600 people.’ Some subjects were then asked to choose between two programs, A and B, whose consequences were described as follows:

If Program A is adopted, 200 people will be saved.

If Program B is adopted, there is 1/3 probability that 600 people will be saved, and 2/3 probability that no people will be saved.

28. The majority chose program A. Both programs are expected to save 200 lives, but most subjects were risk averse and preferred the certain outcome. A second set of subjects was given a choice between programs C and D, whose consequences were described as follows:

If Program C is adopted 400 people will die.

If Program D is adopted there is 1/3 probability that nobody will die, and 2/3 probability that 600 people will die.

²⁰ Psychologists Lichtenstein and Slovic (1971, 1973) discovered preference reversal in experiments in the lab and in Las Vegas. Economists Grether and Plott (1979) confirmed their results. For reviews, see Tversky and Thaler (1990) and Starmer (2008).

29. There is no substantive difference between Programs A and C, on the one hand, and between Programs B and D, on the other. Yet in the second problem, the majority of subjects chose Program D (and were thus risk seeking). The only difference between the two choices is the framing. In the first, the problem is framed in terms of lives saved, and the reference point is the outcome in which all die. In the second, the problem is framed in terms of lives lost, and the reference point is the outcome in which all live.

30. The experiment, like many others, suggests that we are typically risk averse when faced with possible gains and typically risk seeking when faced with possible losses. Choices can often be framed either in terms of possible gains or in terms of possible losses. Thus our decisions can often be reversed by a change of framing.²¹

31. Part of the reason for the inconsistency is that we are loss averse, giving more weight in decisions to a loss of, say, \$100 than to a gain of the same amount. Loss aversion is associated with an endowment effect: we tend to value many things more highly simply by virtue of owning them. Thus college students randomly

²¹ The standard theory of choice under uncertainty is expected-utility theory. Consider a lottery (gamble, prospect) that offers chances of winning prizes x_1 and x_2 with probabilities p_1 and p_2 respectively. Its expected *value* is $p_1x_1 + p_2x_2$. Its expected *utility*, according to expected utility theory, is $p_1u(x_1) + p_2u(x_2)$, where u is a function that allows for risk aversion or risk seeking. Early violations of expected utility theory were found by Allais (1953) and Ellsberg (1961). Kahneman and Tversky (1979) provided evidence of further problems, and presented prospect theory as an alternative. Prospect theory says that the utility of the lottery considered above is $\pi(p_1)v(x_1) + \pi(p_2)v(x_2)$ where π is a function that transforms probabilities (for example, increases the weight of low probabilities) and v is a function that transforms the prizes in a way that differs from the transformation u of expected-utility theory in that v depends on the value of x relative to the reference point and is steeper in the domain of losses than of gains.

given coffee mugs tend to value the mugs more highly than do students not given them. Closely related is status-quo bias: a tendency for people to prefer the status quo to changes even when, by objective measures, the change is an improvement.²²

Inconsistency over time

32. Many important choices involve tradeoffs between current and future consumption. Typically, future consumption is discounted relative to present consumption. There is nothing internally inconsistent about discounting, and so nothing irrational about it. But many of us have a bias toward the present that exceeds the effect of internally consistent discounting.

33. Early evidence of present bias came from Thaler (1981), who asked subjects to say how much money they would require at various future dates to compensate them for giving up \$15 now. The responses implied discount rates of more than 300 percent over a one-month horizon and of only 19 percent over a ten-year horizon. Other studies have found different rates, but have replicated the finding of rates that decline as the time horizon is extended.²³ If our discount rates decline in this way, we are time-

²² For an overview, see Kahneman, Knetsch, and Thaler (1991). Among other things, these results cast doubt of the applicability of the Coase theorem, which states that in the absence of transactions costs the initial allocation of rights affects the distribution of wealth but not the ultimate allocation of rights (Kahneman, Knetsch, and Thaler 1990). For a discussion of reference-dependence, see also Tversky and Kahneman (1986).

²³ For example, Laibson, Repetto, and Tobacman (2007) estimate discount rates of 15–40 per cent a year for short-run choices and 4 per cent a year for long-run choices. See Frederick, Loewenstein, and O’Donoghue (2002) for a review. Strotz (1956) identified the link between discounting and consistency over time and discussed the idea that intertemporal decisions

(continued)

inconsistent.²⁴ On Monday, we prefer to delay consumption from Tuesday to Wednesday, but when Tuesday arrives we no longer want to wait till Wednesday. So if we committed ourselves to waiting on Monday, we regret it. In practice, our decisions involve a battle between temptation and self-control, which can be thought of as arising because of a divergence between the interests of the ‘present self’ and ‘future selves’. Impatient choices are said to impose ‘internalities’ on future selves, by analogy with decisions that impose externalities on others.

34. Choices over time are complicated by three other factors. First, we underestimate the power of exponential growth, and thus underestimate the speed at which savings and debt can accumulate (Stango and Zinman 2009). Second, cues such as seeing a piece of cake and visceral influences such as being hungry can make present consumption particularly compelling (Loewenstein 2000). Third, we have trouble predicting our future tastes. For example, if we are asked to choose a series of weekly snacks in advance, we choose more variety than we subsequently want.²⁵ If we win the

involve conflict between different selves. Other important contributions are Ainslie (1975) and Laibson (1997).

²⁴ Decisions are time-consistent if future consumption is discounted at a constant rate. If ρ denotes that rate, the discount factor is $\delta = 1/(1 + \rho)$, and the utility at time $t = 0$ of a profile of future consumption is $\sum_{t=0}^T \delta^t u(c_t)$, where c is consumption and $u(\cdot)$ is per-period utility. A simple present-biased utility function, is $u(c_0) + \beta \sum_{t=1}^T \delta^t u(c_t)$, in which β determines the extent of present bias. This utility function is called quasi-hyperbolic and is said to represent beta-delta preferences. An example of a hyperbolic utility function is $\sum_{t=1}^T (1/t) u(c_t)$.

²⁵ For evidence, see Gilbert et al. (2002) as well as Loewenstein, O’Donoghue, and Rabin (2003), Kahneman, Wakker, and Sarin (1997), and Kahneman (1994).

lottery, we are, after the initial euphoria wears off, only a little happier than others, while if we become paraplegic, we are, eventually, only a little less happy. Difficulty in predicting future states is related to the influence of visceral states: when hungry, for example, we overestimate how much we will want to eat later—hence the advice not to shop for groceries on an empty stomach.

35. Further suggestive evidence for imperfect consumer rationality comes from firms' interest in psychology (e.g., Earl and Kemp 2002) and behavioural economics (Welch 2010) and from the marketing strategies that firms follow. If consumers were better information processors, for example, firms would have no reason to favour prices like \$99 and \$199. And more advertising would provide information on price and quality and less would depict cues (e.g., pictures of appealing food).

Other-regarding preferences and social norms

36. Finally, there is evidence of preferences that differ from simple self-interest. There is nothing irrational about such preferences (*de gustibus non est disputandum*—there's no disputing taste). So they are fully consistent with the core assumption of neoclassical economics, but they differ from the preferences assumed in much applied neoclassical work.

37. One of the best-known pieces of evidence for nonstandard preferences comes from the ultimatum game (Güth, Schmittberger, and Schwarze 1982). One player, the proposer, offers part of a given sum of money to the other player, the responder. If the responder accepts the offer, the proposer keeps the rest. If the responder rejects the offer, no one gets anything. The game is not repeated. If the responder is rational and concerned only to

maximize her wealth, she will accept any positive offer. If the proposer is rational and self-interested, and believes that the responder is rational and self-interested, he will therefore offer the smallest possible amount.²⁶ In fact, proposers typically offer 40–50 percent of the available sum, and many responders reject offers below 30 percent (Camerer 2003, ch. 1). Thus responders, at least, don't maximize their monetary payoff. They are prepared to incur a cost to punish ungenerous proposers.

38. Other evidence about other-regarding preferences comes from public-good experiments, in which players can contribute to a project that has net benefits for the group but in which the free-rider problem means that each player maximizes his payoff by contributing nothing. In a typical one-shot experiment, four players are initially given \$20. Every dollar they contribute to the project generates a social return of \$2, but this return is divided among four players, so the private return to contributing a dollar is only 50 cents. The players can keep any money they don't contribute. The payoff-maximizing strategy is to contribute nothing (and to hope that others don't follow this strategy). But if no one contributes anything, everyone walks away with only their initial \$20, whereas if they all invest \$20, they all get to keep \$32.

39. In the first round of a finitely repeated game, the average player contributes about 50 percent of his per-round endowment (Croson 2008). There are, however, big differences among players. Perhaps 30–50 percent of the players contribute nothing, as would be predicted if people had simple self-interested preferences, while the rest cooperate to varying degrees (Ledyard 1995). Moreover, in

²⁶ This outcome is not the game's only Nash equilibrium, but it is its only subgame-perfect equilibrium.

finitely repeated games, cooperation tends to decline over the rounds of the game, so that by the last round the average contribution may be only a quarter or so of the endowment (Croson 2008). The decline may occur partly because the players are learning that contributing has a negative payoff, but this doesn't seem to be the whole explanation. Some players initially cooperate even though they understand the game and apparently stop cooperating because they are disappointed by the level of other players' contributions (Andreoni 1995, Dawes and Thaler 1998).

40. Indeed, contributions in public-good games may decline partly because cooperators want to punish defectors and can do so only by not contributing. To test this explanation, Fehr and Gächter (2000) allowed subjects to pay to punish another player. When punishment was possible, cooperative players often punished those that had defected in the previous round, and the level of cooperation rose over the rounds of the game instead of falling. By round six, the average contribution was close to the maximum. Results such as these suggest that many people are conditional cooperators and altruistic punishers: they contribute if others contribute and they punish defectors at personal cost. Put differently, they comply with a norm that prescribes cooperation with cooperators and the punishment of defectors.

41. Other research shows that material incentives designed to encourage cooperation sometimes undermine the effectiveness of cooperative social norms (Bowles 2008, Fehr and Rockenbach 2008, Frey 1997, Gintis et al. 2005). A striking possible illustration comes from a study of a group of day-care centres in Israel that imposed a fine on parents who were late collecting their children and found that parents became even less punctual (Gneezy and

Rustichini 2000). Parents may have thought of the fine as a price and may have come to view being late as a service that they could purchase, not as a violation of a norm against inconveniencing others. A similar result was found in an experimental study of environmental regulation in rural Colombia: an imperfectly enforced regulation restricting the use of a limited environmental resource led to outcomes worse than those under no regulation.²⁷ One explanation is that externally imposed rules reduce intrinsic motivation (Frey 1997).

42. Other work suggests that people worry about their position relative to others as well as their absolute position. Traditionally, economists have assumed that people's welfare depends on their consumption over their lifetimes. Generally, more is better, and a higher income is desirable because it allows more consumption. But there is evidence that people are very concerned about their relative position or status (see Heiffetz and Frank 2008). Higher

²⁷ The study is Cardenas, Stranlund, and Willis (2000). Groups of eight villagers were asked to choose how much to take from a hypothetical forest, in a set-up in which the players could see that the pursuit of self-interest was socially suboptimal. The level of cooperation in the games was less than the social optimum, but more than would be predicted of rational and self-interested players. The main purpose of the experiment, however, was to test whether an imperfectly enforced regulation improved cooperation. So in a second stage half the groups were told that they should take only their share of the socially optimal amount of the resource and that they would be fined if they were audited and found to have taken more. But the subjects were given information that implied that the probability of being audited was low and that the expected-value-maximizing choice was still to take too much. In the first rounds of the second stage, regulation worked well, but after a few rounds people were taking at least as much as before. Cardenas and his colleagues hypothesized that regulation 'crowded out group-regarding behaviour in favour of greater self-interest' (p. 1731). The other half of the groups continued to play the game without regulation but now had the ability to communicate with each other before making their choices. They cooperated somewhat more than before, and in the contrast to the case of regulation, the improvement endured.

income is desirable partly because it allows more conspicuous consumption and higher status. For example, we may prefer to live in a relatively large house in a neighbourhood of small houses than to live in a somewhat larger house in a neighbourhood of very large houses (see Frank 2005). We may prefer to earn a relatively high wage in a low-wage firm than to earn a higher wage in a firm where the average wage is higher still (Shafir, Diamond, and Tversky 1997).

What does the evidence imply?

43. Much evidence suggests, then, that behaviour sometimes deviates systematically from the predictions of neoclassical economics. It is less clear how widespread, enduring, or important the deviations are. For example, effects found in some experiments are not found in others.²⁸ More fundamentally, the relevance for policy of experimental evidence, which provides the strongest case against rationality and self-interest, is not always clear. Experiments allow careful controls, but they differ in many ways from ordinary markets. The stakes may be small and the situations unrealistic. In ordinary markets, people may behave differently and learn from their mistakes. Over time, evolutionary pressures may weed out less-rational firms. Arbitrage by smart traders may limit the influence of irrational traders. Overall, markets may be less affected by irrationality or non-selfish preferences than behaviour in experiments (List 2003, Levitt and List 2007).²⁹

²⁸ The endowment effect, for example, is not found in a careful recent study by Plott and Zeiler (2005).

²⁹ There are many critical reviews of behavioural economics. Gul and Pesendorfer (2008) criticize behavioural economics and neuroeconomics,

(continued)

44. Yet it would be wrong to conclude that violations of irrationality are fleeting or unimportant. Many anomalies have survived repeated testing; preference reversals, for example, survived what the sceptical economists doing the research described as ‘a series of experiments designed to discredit the psychologists’ work as applied to economics’ (Grether and Plott 1979, 623). Some violations persist even when the stakes are high relative to people’s incomes (Cameron 1999, Kachelmeier and Shehata 1992). Moreover, there are now many studies that document irrationality or other-regarding preferences in real-world settings (DellaVigna 2008). It is true that when a task is repeated many times and feedback is prompt, people learn from their mistakes. But learning is often slow, and for some decisions, feedback is too infrequent (buying a house), too late (saving for retirement), or too noisy (investing in shares) to be very useful. Arbitrage and evolutionary pressures no doubt weed out some firms, but there are limits to their effectiveness (e.g., de Long et al. 1990). Some markets may be relatively unaffected by individual

arguing that seemingly irrational choices can sometimes be analyzed by assuming rational choice with non-standard preferences. Fudenberg (2006), reviewing a collection of articles on behavioural economics edited by Camerer, Loewenstein, and Rabin (2003), argues that ‘[t]here are too many behavioral theories, most of which have too few applications’ (p. 697). David Levine (2009) argues that the relevance of psychological evidence to economics is exaggerated because psychology focuses on individual behaviour, especially the abnormal, while economics focuses on normal market outcomes. Binmore and Shaked (2010) dispute the interpretation of some experimental evidence on social preferences, focusing on Fehr and Schmidt (1999). There are also criticisms by psychologists of the psychological research that underpins behavioural economics. Gigerenzer (1996), for example, criticizes work on ‘narrow norms and vague heuristics’ by Kahneman and Tversky and argues that ‘fast and frugal’ heuristics are surprisingly reliable. Finally, there are criticisms by legal researchers, such as Posner (1998), who, responding to an article on behavioural law and economics by Jolls, Sunstein, and Thaler (1998), criticizes it as, among other things, exaggerating human irrationality.

irrationality, but it would be unwise to assume that markets are generally unaffected. Evidence suggests, for example, that financial and betting markets are reasonably efficient in the sense of excluding opportunities for easy profit, but that they are not immune from the effects of individual irrationality (Thaler 2005, Snowberg and Wolfers 2010). The recent rise and fall of house prices in the United States may be a case in which individual irrationality led to global macroeconomic problems (Akerlof and Shiller 2009).

45. Drawing conclusions about the balance of the evidence is extremely difficult, in part because it's impossible for any individual to comprehend more than a small subset of the relevant evidence, in part because, as Friedman (1953, 40) noted, '[t]he importance of [economics] to everyday life and to major issues of public policy impedes objectivity', and in part because we suffer from confirmation bias—the tendency to seek out evidence that corroborates our beliefs and to interpret ambiguous evidence in a light favourable to those beliefs (Nickerson 1998). However, the evidence presented by psychologists and behavioural economists seems to create serious problems for neoclassical economics, suggesting that policy analysts should be sceptical about the applicability of theoretical results that assume sophisticated reasoning on the part of individuals. In addition, the behavioural-economic results summarized above seem robust enough to use in designing regulation. At the same time, it would be premature to dismiss neoclassical analysis such as that mentioned in the beginning of this paper. Behavioural economics may offer insights into environmental regulation and competition policy—for example about ways of getting consumers to reduce polluting activities—but neoclassical economics remains the only comprehensive source of guidance in these and others areas.

Unlike neoclassical economics, behavioural economics is not a comprehensive theory that can be used to analyze almost any policy problem.

Regulatory approaches suggested by behavioural economics

46. This section of the paper looks at just four areas where behavioural economics has a relatively strong claim to relevance, namely the regulation of

- Retail savings and investment products,
- Consumer credit,
- Individual insurance, and
- Drugs, gambling, and impulsive behaviour.

Savings and investment

47. The KiwiSaver scheme has clearly been influenced by behavioural economics. Consistent with research on present-bias, it presumes that some people have a tendency to save too little. Consistent with research on status-quo bias, it makes enrolment in the scheme the default option. By preventing impulsive withdrawals, it provides a commitment device to aid self-control.³⁰ Consistent with doubts that savings decisions are fully rational, it

³⁰ Laibson (1997) notes that illiquid savings products are a useful commitment device for present-biased individuals and argues that financial liberalization, which increases liquidity, may reduce savings. See also Ashraf, Karlan, and Yin (2006), which finds that a group of hyperbolic discounters in the Philippines save more when offered an illiquid savings product.

presumes that the savings it generates won't be offset one for one by declines in other forms of household saving.

48. KiwiSaver came into effect in July 2007, and by April 2010, some 1.40 million people were enrolled, exceeding forecasts, while .24 million had opted out.³¹ Household savings have increased significantly since the introduction of KiwiSaver (Reserve Bank 2010), but whether KiwiSaver has contributed to the increase is unclear;³² the financial crisis may be more important. Moreover, contributors to KiwiSaver get government subsidies, so it is hard to distinguish enrolment for behavioural-economic reasons from enrolment for neoclassical reasons. And the subsidies for KiwiSaver reduce public savings, so the scheme's effect on national savings is also hard to determine. Yet, if savings decisions are not fully rational, it would not be surprising if KiwiSaver had increased household savings.

49. Behavioural economics suggests other ideas for savings-related regulation. One is that subsidies are not the only, and are probably not the most cost-effective, way of encouraging savings. As a field experiment in South Africa shows, advertising may be as powerful as quite large financial incentives. Men who received junk mail offering a short-term loan were more likely to take up

³¹ For enrolments, see <http://www.kiwisaver.govt.nz/statistics/ks-stats-10-04-30.html>, viewed on 7 June 2010. Inland Revenue Department (2009, 11) forecast that it would take till 2013/14 for enrolment to reach 1.38 million.

³² Gibson and Le (2008, 1) found that by January 2008 KiwiSaver had raised total savings only slightly and concluded that it may be a 'costly and ineffective solution to a relatively small problem'. It may be too early to tell, however. Discussing 401k retirement savings, a tax-advantaged employer-provided scheme in the United States, Benjamin and Laibson (2003) argue that the long-run increase in savings caused by the scheme has been much larger than its short-run effect.

the loan if the letter included a photo of a woman's face, and the photo increased take-up as much as a 25 per cent reduction in the interest rate (Bertrand et al. 2010).

50. Information-disclosure regulation is another area for which behavioural economics has implications. Information-disclosure regulations are of course common and uncontroversial. New Zealand law requires that those seeking funds from investors provide a clear disclosure of the nature of the investment and its costs and risks.³³ Further disclosure requirements have been introduced in the wake of the financial crisis and the failure of many finance companies, including a requirement that non-bank deposit takers obtain and disclose a credit rating.

51. But, while information-disclosure regulations are common and uncontroversial, they are not easy to reconcile with neoclassical economics, even though neoclassical economics routinely deals with the implications of imperfect information. At least in simple neoclassical models, uninformed buyers are still rational and are therefore sceptical. They assume that a firm that fails to disclose information about its product has something to hide. As a result firms with good-quality products have an incentive to disclose information. Ultimately the sellers of all but the worst products should choose to disclose information: there should be no need for regulation to require it (Milgrom 2008).

52. By contrast, the assumption that people are not just uninformed but also less than fully rational makes it more likely that information-disclosure regulations, which influence not only

³³ The *Securities Act 1978* and the *Securities Regulations 1983* require that investors receive an investment statement and, if they request it, a more-detailed prospectus.

what people know but also what they pay attention to, may be useful. Among other things, information-processing problems suggest that disclosure for consumers should be very simple.

53. Drawing on arguments from behavioural economics, the ‘Squam Lake’ group of finance professors recently proposed that investment funds provide a simple disclosure modeled on mandatory food labeling (Kenneth French et al. 2010, ch. 6). Food labels, designed to fit on small surfaces, are shorter and more focused than typical financial disclosures, and thus better attuned to the limits of human information processing. Table 1 sets out part of the investment disclosure label proposed by the Squam Lake group. (The rest of the label explains the information in the table). The proposal is notable not only for what it includes but for what it excludes, namely information on past returns. The reason for the exclusion is that many retail investors mistakenly assume that high past returns indicate high future returns, which generally isn’t true (Carhart 1997). The group also recommends that ‘Whenever an advertisement or other disclosure about an investment product ... reports an average prior return, it ... also include a standardized measure of the uncertainty associated with the average’ (p. 61). In contrast to past returns, fees and expenses do help predict future returns (higher fees being associated with lower returns) and are thus included in the Squam Lake disclosure. Similar rules could be applied to KiwiSaver and other investment funds.

Table 1 Squam Lake Group’s proposed disclosure label

Fund Name	Classic Market Index			
Fund Type	U.S. Equity			
	Annual	Buy	Sell	10-Year
Fees and Expenses	0.30%	0.00%	0.00%	4.67%
	5%	50%	Average	95%
Possible 10-year Payoffs (per \$100)	\$49.54	\$132.27	\$158.07	\$353.16
Turnover	4.00%			
Annual Volatility	20.00%			

Source: French et al. (2010, 64).

Note: The possible 10-year payoffs are the mean and selected percentiles of the estimated distribution. The mean is assumed to be higher than the 50th percentile because the distribution of typical investment returns is skewed to the right. Turnover is the percentage of the firm’s holdings bought and sold in a year (the higher the percentage, the higher are realized capital gains, and thus in the US taxes, and the higher are unmeasured costs associated, for example, with bid–ask spreads). Annual volatility is the standard deviation of annual returns.

54. Other simple disclosures might also be contemplated.

Finance companies and other issuers of risky debt might be required to disclose not only the promised interest rate on their debt but also an estimate of the *expected* interest rate. The expected rate takes account of the probability of default and can be estimated from credit ratings.³⁴

55. Behavioural economics could also inform prudential regulation of savings in banks. Since 1996, prudential regulation has emphasized monitoring by depositors over monitoring by the

³⁴ If rating changes follow a Markov process, the probability of default over a given number of years depends only on the initial credit rating and the annual ratings-transition matrix, the elements of which are the probabilities of the possible changes in ratings. Ratings-transition matrices are published by ratings agencies.

Reserve Bank.³⁵ Evidence from the United States suggests that private monitoring may be effective (Flannery 1998). And in New Zealand regulated information disclosure facilitates private monitoring while the absence until recently of deposit insurance has encouraged it. Neoclassical economics suggest that reliance on private monitoring may suffer from a free-rider problem, because for small depositors the cost of analysing information to determine whether a bank is sound probably outweighs the benefit, even though the benefit of the analysis to depositors as a group outweighs the cost. Conventional political economy also suggests that the absence of formal deposit insurance isn't entirely credible: when it comes to deposit insurance, the joke goes, there are two kinds of governments—those that provide it and those that think they don't. Evidence of poor information-processing powers casts further doubt on the efficacy of private monitoring—though of course doesn't imply that monitoring by a government agency will be better. In addition, evidence of risk-seeking in the domain losses raises the possibility that banks facing losses may take excessive risks. If so, regulators have another reason to intervene quickly to control the risk-taking of troubled financial institutions benefitting from implicit or explicit government guarantees.

56. Although regulation may help investors make good choices among investments, it also raises the cost or reduces the availability of investment products—which may be particularly unhelpful if present bias causes people to invest too little. One possible cost of regulation is created by hindsight bias, the phenomenon that an event that has occurred seems in hindsight to have been more predictable than it really was (Fischhoff 1982).

³⁵ See *Reserve Bank Act 1989*, Part 5, and Grimes (1996).

The success of an investment may be entirely unpredictable. If it fails, however, its failure will tend to seem predictable. Those who make mistakes can thus seem negligent when they are merely unlucky. Regulation needs to ensure that unsuccessful investment promoters are not judged on the basis of hindsight (Rachlinksi 1998).

Consumer credit

57. Research that suggests that people save too little also suggests that they borrow too much. Indeed, excess borrowing may be a bigger problem than insufficient savings, because financial firms have an incentive to encourage both savings and borrowing, which is helpful in the case of savings but not in the case of borrowing. That is, banks' advertising and sales promotion might help correct a consumer failure that leads to insufficient savings, bringing the level of savings closer to what would be observed in a market of fully rational consumers, whereas their advertising and sales promotion might exacerbate a problem of excess borrowing.

58. Some people appear to borrow for longer than they should on credit cards. Overconfidence in their ability to pay off their balance in full may cause them to accept cards with low annual fees and high late fees and interest rates (Ausubel 1991). Low required minimum payments may then serve as an anchor that causes them to pay less than they otherwise would (Stewart 2009). Underestimation of the exponential growth of an unpaid interest-accruing balance may further reduce their monthly payments (Stango and Zinman 2009). On the other hand, cardholders get monthly feedback on the effects of their credit-card decisions and

frequent opportunities to change course, and appear to learn from their mistakes (Agarwal et al. 2008).

59. Table 2 illustrates a disclosure required in the United States by the Credit CARD Act of 2009, which may protect cardholders that are vulnerable to these biases, without imposing large costs on credit-card issuers or limiting the freedom of sophisticated cardholders. (It may, however, raise fees for the sophisticated, because, if the vulnerable are encouraged to reduce their interest-bearing balances, banks can no longer subsidize fees for the sophisticated with the profits made from the vulnerable—as discussed below.)

Table 2 Illustration of disclosure required by US Credit CARD Act 2009

Minimum Payment Warning:

If you make only the minimum payment each period, you will pay more in interest and it will take you longer to pay off your balance. The table is based on your standard minimum payment and does not include any past due and overlimit amounts. For example:

If you make no additional charges using this card and each month you pay...	You will pay off the balance shown on this statement in about...	And you will end up paying an estimated total of...
Only the minimum payment	14 years	\$7,690
\$163	3 years	\$5,856 (Savings = \$1,834)

If you would like information about credit counseling services, call 866-685-6322

Note: The disclosure relates to a card with a balance of \$5,122.45, a minimum required payment of \$103, and an annual interest rate of 8.9 percent.

60. In addition to prescribing information disclosure by lenders, the government could increase its provision or subsidization of information for individual borrowers or for consumers generally. It already provides a little such advice through the Ministry of Consumer Affairs and it subsidizes the Citizens Advice Bureau. It might increase those subsidies or also subsidize other organizations with similar goals, such as Consumer NZ. The fact that information is a public good (non-rival in

consumption and non-excludable) creates a neoclassical argument for subsidizing or providing information, but governments usually choose to subsidize or provide only a very limited range of information, because markets often find ways of overcoming the non-excludability problem (there are plenty of commercially supplied books, newspapers, magazines, and informative websites), and because the imperfections of public subsidies or public provision must also be taken into account. But if public-good problems are compounded by flaws in consumer decision making, so that consumers don't always know what kind of information they should ask for, there is another argument for public subsidies or provision.

61. The accompanying case study on the regulation of consumer credit (Tooth 2010) considers these issues in more detail.

Insurance

62. Insurance is another regulatory area where the application of behavioural economics may be fruitful. First, insurance law in New Zealand has been said to be 'singularly bereft of legislative protection for consumers' and 'characterised by judge-made law which makes utterly unrealistic expectations of consumers' (Grainer, Bevan, and Dugan 2010, 266). Second, psychologists and behavioural economists have extensively investigated the way people make decisions in the presence of uncertainty.

63. According to prospect theory, consumers are loss averse and tend to place too much weight on events with small probabilities. According to research on heuristics and biases, they overestimate salient risks, such as those that tend to make the news. They are also extremely, arguably irrationally, averse to

small risks.³⁶ For all these reasons, it would not be surprising if consumers paid too much for insurance against small risks. Experimental subjects have been found to pay as much for air-travel insurance against terrorist acts as for comprehensive air-travel insurance (Johnson et al. 2003).³⁷ And there is a widespread view that many consumers overvalue extended warranties.³⁸

64. But underinsurance against large risks may be a bigger problem. Insurance against some important risks, such as the loss of one's car or house is available yet not always fully used, leaving people vulnerable to large avoidable losses. Underinsurance against floods has been observed in the US, even when insurance is subsidized (Johnson et al. 1993). Although the overweighing of small probabilities encourages people to insure against these risks, overconfidence may have a more-than-offsetting effect. On average, people tend to underestimate risks that are under their own control, such as the risk of causing an accident and may therefore underinsure these risks (Weinstein 1989, Sandroni and Squintani 2007).

³⁶ Rabin (2000) shows that, in the framework of expected-utility theory, the degree of risk aversion necessary to explain a risk-averse choice in a small-stakes gamble (e.g., refusing even odds of winning \$11 and losing \$10) implies crazily risk-averse choices in larger-stakes gambles (e.g. refusing even odds of winning \$1 million and losing \$100). See Rabin and Thaler (2001) for an overview. Loss aversion helps explain the 'risk averse' choice in the small gamble.

³⁷ This result is actually most consistent with a specific psychological theory of probability judgment called support theory (Tversky and Koehler 2002).

³⁸ Consider the episode of *The Simpsons* in which Homer has a crayon hammered into his nose to lower his I.Q. 'The surgeon knew the operation was complete when Homer finally exclaimed: "Extended warranty! How can I lose?"' (Camerer et al. 2003)

65. A possible response to underinsurance is to make some kinds of insurance compulsory, either by regulating for the purchase of private insurance or by establishing tax-funded public insurance. Compulsion is supported to some extent by traditional analysis of externalities (the likelihood of public assistance being provided to the uninsured) and adverse selection (the problem that the high risk are more likely than the low risk to seek insurance).³⁹ Another option is to make full insurance a default option, perhaps for employees or for people seeking insurance. Involving employers in insurance as well as retirement savings would require a fundamental change in the way insurance is sold, however, and would demand stronger evidence of the extent and significance of underinsurance. It is not further considered here, although it could be examined in a case study. Making full insurance the default for those seeking insurance may be useful, but it could be done by insurers themselves without regulation, perhaps with some encouragement by governments seeking, at least, to reduce externalities.

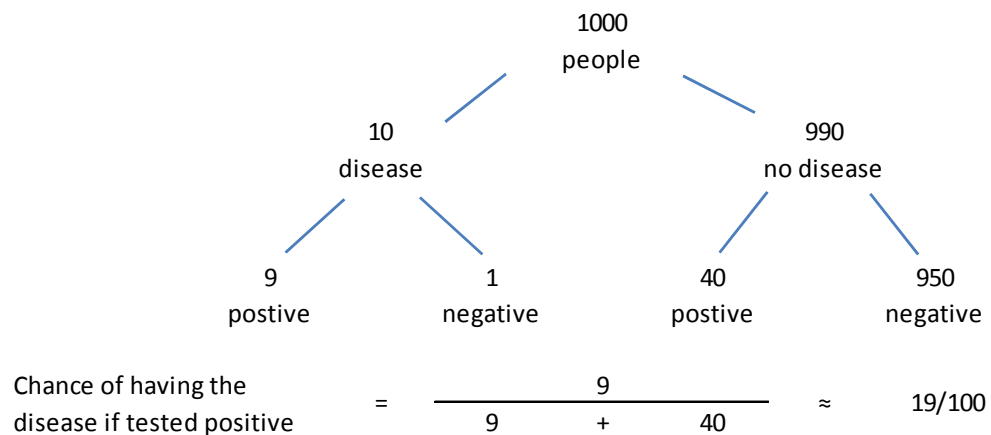
66. Given concerns about consumers' insurance decisions and uncertainty about whether biases for over-insurance or under-insurance predominate, the best option may be for the government to provide or require the disclosure of more information on risks. Estimates of the probabilities of events might also be disclosed in ways that are relatively easy to understand. In particular, estimates

³⁹ There is a theoretical argument that suggests that overconfidence may weaken the case for making insurance compulsory. Rothschild and Stiglitz developed a neoclassical model in which imperfect information in an insurance market creates adverse selection and in which regulation requiring insurance is a Pareto improvement. Sandroni and Squintani (2007) add overconfidence to this model and show that such regulation is no longer a Pareto improvement over no regulation.

appear to be easier to understand if they are expressed in terms of natural frequencies. Thus ‘7 in every 1000 people like you will die next year’ appears to be easier to understand than ‘Your chance of dying next year is 0.007.’ Evidence from medical studies suggests that graphical representations of risk may aid understanding (Lipkus and Hollands 1999). A ‘Paling palette’ indicates a probability of .007 by showing 1,000 stylized individuals in diagram, 7 of them highlighted (Paling 2003). Estimates of losses in the absence of insurance might also be disclosed.

67. Incidentally, information presented in natural frequencies also reduces errors in updating probability estimates in the light of new information—for example, estimating the probability that a person has a disease given a positive test result (Gigerenzer 2003). Figure 1 illustrates, using a diagram inspired by Fountain and Gunby (2010). The example is the same as that discussed in footnote 18, but the diagram is more intuitive than the mathematics of the footnote.

Figure 1 Reasoning with natural frequencies is easier than with probabilities



Drugs, gambling, and impulsive behaviour

68. Another area where the case for applying behavioural economics is strong is regulation of addictive substances and possibly addictive activities such as gambling. Here, present-bias, cues, and visceral influences on decision-making are associated with ‘hot-state’ choices by addicts that are widely recognized to diverge from their interests, even while other people, in ‘cold states’, are able to make prudent decisions. Standard neoclassical theory has something to say about the supply of drugs—for example about the effects on price of cartels and government interventions to restrict supply. The neoclassical theory of rational addiction (Becker and Murphy 1988) can also explain some features of addiction, such as binges and cold-turkey withdrawals, and the effect of drug prices on the use of drugs, but it cannot explain others, such as repeated, unsuccessful attempts to quit and addicts’ beliefs that their choices are mistakes.⁴⁰

69. In some behavioural-economic models of addiction, the optimal tax on drugs takes account not only of externalities but also of internalities—the harm that a problematic drug user imposes on his future self (Gruber and Kozsegi 2001). Once internalities are accounted for, such taxes may even be progressive, since they may disproportionately help low-income consumers to reduce consumption. But in other behavioural-economic models the optimal rate of the tax is actually less than that implied by externalities (see Bernheim and Rangel 2007), in part because cue-driven consumption in hot-states is not very responsive to price.

⁴⁰ For introductions to addiction by behavioural economics, see Loewenstein and Rick (2008) and Bernheim and Rangel (2007, section 2).

Moreover, taxes, like prohibitions, do not have the libertarian-paternalist benefit of allowing normal consumption by non-addicts.

70. A common rationale for existing bans on the advertising of alcohol and cigarettes is that advertising encourages young people to start consumption. The significance of cues suggests that it may be useful because it helps addicts avoid impulsive consumption. Similar reasoning might suggest that the government should reduce advertising for its own gambling scheme, Lotto. The significance of cues also suggests that it is useful to create counter-cues, such as viscerally charged warnings on cigarette packs. Similar warnings might accompany alcohol and gambling. Such warnings may, however, reduce the pleasure that non-addicts get from consumption or make addicts feel guilty without much changing their behaviour (Loewenstein and O'Donoghue 2006).

71. Regulation could also facilitate self-control, without preventing use. The *Gambling Act 2003* allows people who identify themselves as problem gamblers to ban themselves from a casino. Indeed, a man who recently thought he had won \$60,000 was denied the prize because he had previously added his name to a list of self-banned gamblers (a more-effective policy would have stopped him gambling in the first place).⁴¹ In addition, gamblers could be required to buy a gambling debit card. Money put on the card could be used after a week's delay to buy gambling chips. The gambler would choose how much to put on the card, but once his chips had been used, he would have to stop gambling until new money was put on the card and another week had passed (Benjamin and Laibson 2003).

⁴¹ 'Gambler's ban costs him \$60,000 prize', Michael Fox, *Dominion Post*, 6 August 2010.

72. A similar policy might be applied to drugs to which access was legal but controlled, with irrevocable self-prohibitions or with self-prohibitions that could be revoked after a delay. Smokers, for example, might put themselves on such a list, at least if the purchase of cigarettes required the presentation of identification. The policy would not be intended to prevent smokers from smoking, but to help quitters avoid impulsive recidivism. Perhaps banks could be required to offer a credit card that would require the cardholder to approve transactions above a threshold value a day or two in advance. Current law provides a cooling-off period for borrowing, but giving people the right to reverse a decision within three days is probably less powerful, because of status-quo bias, than requiring them to plan for the decision in advance.

Substantive criteria for assessing regulations: Behavioural welfare economics

73. This discussion of regulations suggested by behavioural economics glosses over a problem. To evaluate a proposed regulation, we need both a descriptive ('positive') theory of behaviour, such as that provided by behavioural or neoclassical economics, and a normative (that is, ethical) theory. The descriptive theory tells us how a regulation will affect outcomes of interest, and the normative theory tells us whether or not the change is good. For example, the descriptive theory might predict that a night-time curfew on flights at an airport would lead to a certain reduction in noise along with a certain change in the number and timing of flights. The normative theory then says whether the predicted outcome—reduced noise and the new schedule of flights—is, on balance, better or worse than the status quo, or equally good. Behavioural economics undermines the

normative theory that traditionally underlies economic analysis of regulation, namely welfare economics and its offshoot, cost–benefit analysis. How then can proposed regulations be evaluated?

74. Sometimes the problem may be merely theoretical. If there is enough agreement on the goal of a regulation, there is no need for a theory that allows for tradeoffs between different goals (e.g., less noise and more-conveniently scheduled flights). But an advantage of neoclassical welfare economics and cost–benefit analysis is that they provide a principled way of trading off different goals when there is disagreement. Formal cost–benefit analysis is quantitative, and can therefore provide precise answers. If its assumptions are accepted, and its application is feasible, it is very powerful. But even when no quantitative analysis is undertaken, standard welfare economics is influential because economically trained analysts are likely to think of themselves as making an informal estimate of whether the benefits of a regulation outweigh the costs, benefits and costs being understood in terms of willingness to pay and willingness to accept, and thus in terms of preferences. Behavioural economists have therefore begun to consider how neoclassical welfare economics and cost–benefit analysis might be reconstructed in the absence of the assumption of rationality.

75. In the normative theory that is part of neoclassical economics (welfare economics) outcomes are assessed by reference to the same preferences that are used to predict behaviour. What is good is equated with what people choose or

⁴² In a discussion of behavioural economics and neuroeconomics, Gul and Pesendorfer (2008) argue that welfare economics is not in fact normative in this sense. In their view, economists, as economists, should seek only to

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would choose if given the opportunity. Thus, an airport curfew is clearly desirable (a Pareto improvement) if some people prefer the outcomes under the curfew and no one prefers the status quo. Few regulatory changes are Pareto improvements, and the Hicks–Kaldor criterion is commonly applied instead. According to this criterion, which is fundamental to cost–benefit analysis, a regulatory change is desirable if those who gain from it would be willing to compensate those who lose, even if no compensation is paid. (The idea is that when the government makes a large number of regulatory choices each of which creates a net gain, there shouldn't be many people who experience a net loss, and that any remaining concerns about the distribution of well-being should be addressed by the system of taxation and benefits.)

76. Assessing what people would choose can be difficult, but analysts have developed techniques to provide at least rough answers. How much people would pay to reduce noise pollution, for example, might be estimated by giving them a carefully formulated questionnaire⁴³ or by comparing the prices of houses near airports and houses in quieter neighbourhoods.

77. But if choices do not reflect reasonable beliefs and consistent preferences, then they are an imperfect guide to the desirability of outcomes. Some other criterion might be better. Research in behavioural welfare economics, as it is sometimes

understand the world and not to improve it. Their view is probably not standard.

⁴³ The reliability of answers to questions about willingness to pay has, however, been criticized both by neoclassical economists who prefer to rely on preferences revealed by behaviour and by psychologists who believe that the answers merely reflect attitudes (e.g., Kahneman et al 1993 and Kemp 2002).

called, seeks to establish such a criterion (Bernheim and Rangel 2008, Loewenstein and Haisley 2008). Like neoclassical welfare economics, behavioural welfare economics deals with ethics, and thus overlaps with the concerns of philosophers.

Choice free from error and inconsistency

78. One approach to normative analysis in the presence of irrationality is to continue to defer to choice, but to try to weed out choices that don't reflect preferences. For example, choices based on mistaken beliefs can be ignored.⁴⁴ Perhaps workers' willingness to accept certain dangerous work is suspect because workers underestimate the risks (Akerlof and Dickens 1982). Choices that depend on framing or other aspects of the problem that should be irrelevant can also be ignored (Bernheim and Rangel 2009). For example, in the problem of the Asian disease set out above, if we switch between saving 200 lives for certain and taking a chance on saving all 600 according to the framing of the problem, both

⁴⁴ This approach is proposed by Köszegi and Rabin (2008). As an illustration, consider a choice between two bets. In one, you get an apple if a coin is tossed and lands heads up, otherwise nothing. In the other, you get an orange if the coin lands tails up, otherwise nothing. Suppose you normally choose the bet for an apple, which suggests that you prefer apples to oranges, but that you choose the bet for an orange after a long series of heads. If your beliefs are assumed to be correct, either you have inconsistent preferences or a complex and unusual preference for oranges preceded by certain coin tosses. A simpler explanation is that you suffer from the gambler's fallacy. If so, your choice of the bet for an orange after a series of heads should not be taken as indication of your valuation of apples relative to oranges. By contrast, Gul and Pesendorfer (2008) argue that the best way to deal with certain behavioural anomalies is indeed to assume more-complex preferences, in particular over consumption and the choice sets from which consumption is chosen.

choices could be discarded as suspect. The choices that count would be those robust enough to survive changes in framing.⁴⁵

79. This approach has the advantage of respecting consumer sovereignty insofar as it isn't undermined by 'consumer failure', but it is not clear that is practical. If choice is very susceptible to framing and other irrelevant matters, for example, the criterion of unambiguous choice might not be very discerning: many regulatory options might rank equally. Moreover, it is one thing to describe a few cases in which choices clearly do not reflect preferences; it is another to imagine that cost-benefit analysts might generally be able to discern people's preferences reliably other than by observing their choices. Lastly, even the relatively simple neoclassical approach is hard to apply to many regulations, and this behavioural-economic alternative is more complex.

Subjective well-being

80. An alternative is to assess outcomes according to a measure of subjective well-being, such as happiness or experienced utility. This idea goes back to Bentham (1789), but it fell out of favour with economists because of apparently insurmountable difficulties in measuring subjective well-being and the doctrine of behaviourism (not to be confused with behavioural economics) that mental states are not a proper subject of scientific inquiry. As a result, economists came to focus on choices. Problems with choice-based criteria, however, have prompted renewed interest in

⁴⁵ There are related philosophical approaches. One is to count preferences made under ideal conditions. Another is to assume that people have second-order preferences about their first-order preferences, such as a preference for not wanting to smoke, and to count only preferred preferences.

measuring subjective well-being and in using the measurements in the design of policy.⁴⁶

81. Kahneman and others have experimented with measuring experienced utility (pleasure and pain) as it is reported over the course of a day and thus building up a measure of the hedonic value of the day. Others have focused on creating better surveys of reported happiness and related measures, and giving those surveys more prominence in the monitoring of economic performance. Stiglitz, Sen, and Fitoussi (2010, ch. 2) recommend that national statistical offices routinely ask survey questions on subjective well-being, and do so in a way that allows analysis of the relationship between subjective well-being and objective circumstances.

82. Despite progress in the measurement and explanation of subjective well-being, assessing regulations only by reference to estimates of their effects on happiness would be very difficult. Even if it were feasible, it might have some counterintuitive implications. For example, it might justify reduced concern for the disabled on the grounds that they adapt to their circumstances and are not much less happy than the able-bodied.

Using traditional cost–benefit analysis without believing all its assumptions

83. A third alternative, espoused by Sunstein (2000), is to recognize that traditional cost–benefit analysis has flawed conceptual foundations but to use it anyway, at least for some decisions, because it is better in practice than the alternatives.

⁴⁶ See, for example, Layard (2005) and Kahneman, Wakker, and Sarin (1997) and, for a review, Frey and Stutzer (2002).

Indeed, Sunstein argues that behavioural economics provides a better justification than neoclassical economics for traditional cost–benefit analysis:

Cost–benefit analysis is often justified on conventional economic grounds, as a way of preventing inefficiency. But it is most plausibly justified on cognitive grounds—as a way of counteracting predictable problems in individual and social cognition. Poor judgments, by individuals and societies, can result from certain heuristics, from informational and reputational cascades, from thinking processes in which benefits are ‘on screen’, but costs are not, from ignoring systemic effects of one-shot interventions, from seeing cases in isolation, and from intense emotional reactions. Cost–benefit analysis serves as a corrective to these cognitive problems (p 1059).

Libertarian and asymmetric paternalism

Behavioural welfare economics raises the spectre of paternalism, which is anathema to many.⁴⁷ It is not that behavioural economics

⁴⁷ Kant, for example, described a paternalist government as the ‘greatest conceivable despotism’ (1793/1991, 74). And when Alexis de Tocqueville considered what kind of ‘despotism’ might arise in a democracy, he imagined a state that is ‘responsible for securing ... [the] enjoyment [of its citizens] and watching over their fate’ and whose ‘power is absolute, thoughtful of detail, orderly, provident, and gentle’ but ‘daily makes the exercise of free choice less useful and rarer, restricts the activity of free will within a narrower compass, and little by little robs each citizen of the proper use of his own faculties’ (1835–1840, book 4, ch. 6). John Stuart Mill (1859) contended that governments could legitimately restrict people’s freedom only to prevent harm to other people: ‘The sole end for which mankind are warranted, individually or collectively in interfering with the liberty of action of any of their number, is self-protection. His own good, either physical or moral, is not a sufficient warrant.’ Robert Nozick’s (1974) rights-based political philosophy naturally has no place for paternalism. But

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necessarily supports paternalist regulations. When competition is strong, the irrational may still get a good deal from an unregulated competitive market.⁴⁸ To take a trivial example: if you irrationally believe that a particular orange has miraculous benefits, and are willing to spend all your money to get one, you're likely to be exploited, but if you equally irrationally believe that all oranges have miraculous health benefits you'll be fine because oranges are supplied competitively (Benjamin and Laibson 2003). More generally, problems caused by an imperfect market must be compared with problems caused by an imperfect government, and behavioural economics strengthens concerns about governments as well as markets. But, at the very least, behavioural economics undermines one reason for opposing paternalism, and is therefore 'anti-anti-paternalist' (Jolls, Sunstein, and Thaler 1998). In practice, moreover, the policy proposals of behavioural economists are often (mildly) paternalist.

84. Accordingly, behavioural economists have attempted to distinguish acceptable from unacceptable paternalism.⁴⁹ The best-

John Rawls's quite different principles of justice also give priority to liberty (1971/1999, 220). His first principle, which takes priority over the better-known difference (or maximin) principle, is that 'Each person is to have an equal right to the most extensive total system of equal basic liberties compatible with a similar system of liberty for all.'

⁴⁸ Sugden (2004) develops a model in which consumers do not have coherent preferences and markets are 'collections of money pumps operated with the intention of extracting value from consumers' but in which the 'overall effect of these money pumps is benign, not because consumers are induced to form coherent preferences, but because of the effects of competition among arbitrageurs' (p. 1015). Other theoretical and empirical evidence suggest that the competition doesn't necessarily protect irrational consumers (Ausubel 1991, Gabaix and Laibson 2006, Grubb 2009, and Brown, Hossain, and Morgan 2010).

⁴⁹ In doing so, they have joined an older tradition in philosophy. Mill (1859, ch. 5), for example, allowed a person's liberty be infringed to protect that

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known variety of soft paternalism is the libertarian paternalism of Thaler and Sunstein (2003). Libertarian paternalism allows ‘nudges’ that encourage people to choose one alternative but leave them free to choose another. Default enrolment in KiwiSaver is libertarian, because employees can opt out, and paternalist, because enrolment is chosen as the default on the grounds that it is good for many people who nevertheless won’t choose it. Similarly, mandatory information disclosure preserves the liberty of consumers to choose, but encourages them to make informed decisions. (The policies do limit the liberty of employers or sellers.)

85. An attraction of libertarian-paternalist regulations is that they may help the vulnerable (less rational), while imposing little or no cost on the sophisticated (more rational). Sophisticates who work out that enrolment in KiwiSaver makes no sense for them can easily opt out, so their choice isn’t affected by the default. Asymmetric paternalism is a generalization of libertarian paternalism that allows paternalistic regulations as long as the costs they impose on the sophisticated are small relative to the benefits they create for the vulnerable (Camerer et al. 2003).

86. Asymmetry is potentially important because research by psychologists suggests that there is variation among individuals in

person’s welfare if the person is ‘delirious, or in some state of excitement or absorption incompatible with the full use of the reflecting faculty’. Another form of paternalism says that it is permissible to stop people from acting on mistaken beliefs (see Dworkin 1972, 2010), which is consistent with the program of developing a measure of choice-based welfare cleansed of the effect of errors. This kind of paternalism would clearly allow information-disclosure regulation. Perhaps it would also be consistent with regulations that allowed people to do certain things, such as investing in a complicated financial product, only if they could demonstrate understanding of the product.

their susceptibility to some biases. Perhaps not surprisingly, students at the Massachusetts Institute of Technology are better than students at the University of Toledo at avoiding the trap in questions such as, ‘If it takes 5 machines 5 minutes to make 5 widgets, how long would it take 100 machines to make 100 widgets?’ (Frederick 2005). Moreover, people who fall in to the trap seem to be more impulsive and more likely to make time-inconsistent decisions. This is not to say that biases afflict only the less educated: they have been found among doctors, statisticians, and mathematical psychologists. It is dangerous simply to assume that a bias affects some groups but not others.

Cost–benefit analysis for paternalist regulations

87. Asymmetric paternalism lends itself to a kind of cost–benefit analysis. Good paternalist policies are those that create benefits to the vulnerable (less rational) that exceed the costs imposed on others, including sophisticated (more rational) consumers, firms, and the government (Camerer et al. 2003).⁵⁰

⁵⁰ In symbols, good paternalistic regulations are those for which $pB > (1 - p)C + I + \Delta\Pi$, where p is the proportion of people who are vulnerable, B is the net benefit created by regulation for the vulnerable, C is the net cost imposed on the sophisticated, I is per-person implementation costs, and $\Delta\Pi$ is per-person lost profits. How B and C are to be measured, so that they are expressed in the same units and can thus be added to each other and to I and $\Delta\Pi$, is of course a crucial question. They might measure willingness to pay (or accept) in dollars, where willingness to pay (or accept) is measured in ideal conditions, namely after the adjustments for mistakes and ambiguous preferences, as discussed by Köszegi and Rabin (2008) and Bernheim and Rangel (2009), respectively. They might be measured in utils, where weights are attached to each person’s utility scale to ensure commensurability (see, e.g., Yaari 1981) or according to some objective measure of well-being (from neuroscience?). If none of these options is

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88. According to this criterion, if everyone is sophisticated, no paternalist policy has a net benefit. More generally, paternalism is more likely to have a net benefit the larger the fraction of the regulated population that is vulnerable to the problem. Thus, the question of the prevalence of deviations from rationality in the regulated population is important, and restricting the scope of the regulation to certain groups may be helpful. This is consistent with the application of some investor protections to ordinary individuals, but not to institutional or ‘habitual’ investors, and the application of some consumer-protection law to consumers but not to firms buying their raw materials.⁵¹ Assessment of the net benefits to the vulnerable must take account of costs imposed on the vulnerable. For example, even if many unsophisticated people save too little, there may be some for whom KiwiSaver is inappropriate and who remain involved out of inertia.

89. The costs for sophisticated individuals come in two kinds. First, non-libertarian paternalist policies may prevent them from buying some goods and services. For example, they might lose the ability to use drugs prudently (e.g., to take them without getting addicted) or to make risky investments that are nevertheless prudent for them (e.g., because they constitute a small expected-return-increasing addition to a diversified portfolio). Second, sophisticated consumers may be the beneficiaries of firms’ schemes to exploit the vulnerable. If an industry is competitive, and new firms enter when there are supernormal profits to be made, no firm can expect to sustain supernormal profits. If so, the

practical, the criterion is a heuristic that organizes impressionistic assessment.

⁵¹ See *Securities Act 1978* (section 3) and *Credit Contracts and Consumer Finance Act 2003* (section 11).

ultimate beneficiaries of the exploitation of vulnerable consumers must be other consumers, not the firms. If the hotel industry is sufficiently competitive, for example, sophisticated travellers may get accommodation below cost by avoiding the overpriced telephone and minibar. If the credit-card market is sufficiently competitive, sophisticated cardholders may get transaction services and short-term credit for free by paying off their balance each month.

90. It is natural also to take account of the costs incurred by the government in implementing the regulation and the costs incurred by firms in complying with it. The costs incurred by firms include administrative costs such as preparing, printing, and distributing information disclosures and any profits lost from having to change business strategy.

Objections to libertarian and asymmetric paternalism

91. Libertarian and asymmetric paternalism have elicited a number of objections. First, there are traditional concerns about government failure (Glaeser 2006). Officials, ministers, and regulators may in principle be able to select beneficial paternalistic regulations, but they may have little incentive to do so. By contrast, even irrational individuals have an incentive to improve their own welfare. Moreover, the information required to design beneficial paternalistic regulation might be difficult or impossible to obtain. These problems, which are well known, are seen to be more serious once the cognitive limitations of officials, ministers, regulators, and judges are considered. According to Glaeser (2006, 13), ‘the flaws in human cognition should make us more, not less, wary about trusting government decisionmaking’.

92. Second, there are concerns that paternalism may reduce the learning that comes with choice and trial and error (Mill, 1859) especially when default options are (reasonably) taken to convey information about what is optimal. Along similar lines, McCaffery and Baron (2004, p. 434) argue that ‘In private markets, arbitrage mechanisms, which allow some to profit from the biases of others ... can be expected to reduce the effects of bias... In the public sector, however, the absence of any simple, general arbitrage mechanism ... gives reason to believe that the adverse effects of cognitive biases can persist for long periods of time.’

93. Third, there are doubts that behavioural economists correctly identify people’s true interests when decisions are inconsistent over time. Many paternalist policies aim to reduce behaviour that is enjoyable in the short run but harmful in the long run. Implicitly, these proposals give more weight to a person’s long-term interests than to his short-term interests. But does this preference for the long-term have any justification (Whitman 2006)?

94. Fourth, there are concerns that soft paternalism is the first step on a slippery slope that will lead to the banning of gambling, alcohol, homosexuality, and more (Glaeser 2006, Rizzo and Whitman 2009).

95. These objections all express concerns that the benefits of paternalism are likely to be smaller, or its costs larger, than its proponents think. None rules out paternalism in principle. Whether government failure is likely to be greater or smaller than consumer failure is something that needs to be assessed case by case. Although hard paternalism reduces learning, libertarian paternalism, at least, allows room for it (Loewenstein and Haisley

2008). Although short-term interests should not be ignored, there is reason for giving more weight to long-term interests (see Bernheim and Rangel 2007, 14). That there is a slippery slope from soft to hard paternalism is an argument for vigilance, not for refusing all soft paternalism. Yet the objections do call for caution.

96. Other objections, if accepted, are decisive. Sugden (2005) argues against paternalism on the grounds that the role of government should be to maximize people's opportunities, not their welfare. Mill (1859, ch. 3) likewise argues that 'a man's mode of laying out his own existence is best not because it is the best in itself, but because it is his own mode.' If autonomy or opportunity is given enough weight, at least some forms of paternalism are ruled out.

97. If autonomy is not considered sacrosanct, we are left with no single criterion for evaluating regulation, but instead a variety of criteria, including consistency with unambiguous, informed choice, effect on subjective well-being, and consistency with traditional cost-benefit analysis. This is conceptually untidy, compared with the world of neoclassical welfare economics. And it leaves governments with considerable freedom of action: in the absence of a unique criterion for judging whether a regulation is desirable, they have more latitude to pick and choose among the criteria to suit their prior preferences.

98. In practice, however, the lack of conceptual clarity is not always be a problem—or that different from the current situation. When there is widespread agreement about the goal of regulation, and relatively little concern about its side effects and costs, the insights of psychologists and behavioural economists can be applied without philosophical problem. Working out ways of

ensuring that tourists drive on the left might be an example. When people assign different values to different effects of a regulation, behavioural economics may still inform decisions even if it doesn't lead to an unambiguous recommendation. And in New Zealand at least, few regulations are currently subject to quantitative cost-benefit analysis along neoclassical lines, so it is not as though regulations are currently judged against a clear and unique criterion.

Behavioural economics and the process of regulatory decision-making

99. As important as substantive criteria for judging proposed regulations are procedural rules and informal practices that govern their development. There are several sources of procedural rules in New Zealand. One is the Cabinet Office's *Cabinet Manual*, which requires that proposed regulations be accompanied by regulatory impact analyses (Cabinet Office 2008, section 5.71). The Cabinet Office's *Guide to Cabinet and Cabinet Committee Processes* (CabGuide), which provides more detail, states, 'The government wants to ensure that proposals involving regulatory options are subject to careful and robust regulatory impact analysis' and it requires that statements setting out the analysis describe the status quo, the problem that is being addressed and the objectives of regulation, a range of options for addressing the problem, and the 'costs, benefits, and risks' of those options.⁵² Proposals identified by a 'preliminary impact and risk assessment' as likely to have a

⁵² See <http://cabguide.cabinetoffice.govt.nz/procedures/regulatory-impact-analysis>.

‘significant impact or risk’ are reviewed by a Regulatory Impact Analysis Team in the Treasury.

100. The Government has recently tightened some of these requirements (Cabinet Office 2009), and the Treasury has published a handbook offering more detailed guidance on the rules set out in the CabGuide (Treasury 2009). Among other things, the Treasury’s guidance encourages the quantification of costs and benefits and refers to the Treasury’s (2005) guidance on cost–benefit analysis, although in practice most analyses do not include much quantification.

101. Another source of guidance is the Legislation Advisory Committee (2001–2007), which has produced a checklist of 83 questions for the developers of regulations to consider (pp. 14–18), such as ‘Has the policy objective been clearly defined?’, ‘Have those outside the Government who are likely to be affected by the legislation been consulted?’, ‘Has sufficient time and consideration been given to the preparation of the legislation?’ ‘Have vested rights been altered? If so, is that essential? If so, have compensation mechanisms been included?’ Is the legislation consistent with the New Zealand Bill of Rights Act 1990?’ And ‘Should the legislation provide a right of appeal?’

102. In recent years proposals have been made for a regulatory-responsibility law that would establish regulatory decision-making rules in law, in the image of the *Fiscal Responsibility Act* (now part of the *Public Finance Act*). The most recent version of the regulatory-responsibility bill, prepared by Scott et al. (2009), includes six principles that regulations should satisfy. The principles are set out under the headings ‘rule of law’, ‘liberties’, ‘taking of property’, ‘taxes and charges’, ‘role of courts’, and

‘good law-making’. The liberties principle is particularly interesting in relation to paternalistic regulation. In context it reads as follows:

(1) The principles of responsible regulation are that, except as provided in subsection (2), legislation should ...

(b) not diminish a person’s liberty, personal security, freedom of choice or action, or rights to own, use, and dispose of property, except as is necessary to provide for, or protect, any such liberty, freedom, or right of another person...

(2) Any incompatibility with the principles is justified to the extent that it is reasonable and can be demonstrably justified in a free and democratic society.

103. Regulatory-responsibility legislation is often supported on the ground that too much regulation is passed, imposing excessive costs on businesses and, directly or indirectly, citizens. A related but distinct concern is that regulation sometimes responds too hastily to scandals and crises—that it follows the logic of the PM of Yes, Prime Minister, who said during one crisis: ‘Something must be done. This is something, therefore we must do it’.⁵³ Hoping to avoid this trap, the New Zealand government has said that it will ‘[r]esist the temptation or pressure to take a regulatory decision until [it has] considered the evidence, advice and consultation feedback.’⁵⁴

⁵³ <http://www.yes-minister.com/polterms.htm>.

⁵⁴ ‘Government statement on regulation: better regulation, less regulation’, issued in 2009 by the Minister of Finance and the Minister for Regulatory Reform.

104. Concern to avoid hasty regulation predates behavioural economics, but is reinforced by it. Procedural constraints, such as requirements for regulatory impact or cost–benefit analysis, slow decision-making and encourage deliberation, potentially reducing hindsight bias, the overweighting of vivid, recently realized risks, and other problems with intuitive decision-making. As Sunstein argues, behavioural economics provides a justification for the use of cost–benefit analysis even as it undermines its conceptual foundation. It may also suggest ways in which the requirements for deliberation might be improved.

105. One area where it is relevant is the analysis of consumer-protection law and other regulations that have a rationale that is at least partly paternalistic. For example, it may help decision makers judge whether an exception to the liberties principle of the regulatory-responsibility bill ‘is reasonable and can be demonstrably justified in a free and democratic society’. Libertarian-paternalist regulations are consistent with the liberties principle, because they do not infringe individuals’ liberties. But what about regulations that do limit individual liberties, and probably cannot be justified on externality grounds, such as those that require a cooling-off period before a decision is made? Here, it seems reasonable to require that the asymmetric-paternalist approach to cost–benefit analysis set out above be applied. Some questions relevant to such an analysis are set out in table 3.

Table 3 Checklist of questions for paternalistic regulations

Extent of the problem and possible benefits

- a) Is there evidence that people systematically make decisions in the domain covered by the proposed regulation that do not further their own interests?
- b) Do the people making the apparent mistakes consider, on reflection and with good information, that their decisions are mistakes?
- c) Is the domain of the proposed regulation one in which people have good opportunities to learn from their mistakes, or one in which feedback is rare or noisy or too late to be useful? Is it one in which competition between firms is likely to protect people?
- d) Is there evidence that some people are vulnerable to the mistakes while others are not?
- e) Has a similar regulation been tested empirically, in the lab or in randomized field trials or by econometric methods?

Possible costs and problems

- f) Is the regulation likely to create indirect costs for the intended beneficiaries?
- g) Does the regulation reduce the ability of sophisticated consumers (or investors) to pursue their interests?
- h) Is the proposed regulation likely to strengthen or undermine any social norms that help solve the problem that regulation is intended to solve?
- i) Do officials, ministers, and regulators know enough, and have sufficiently strong motivation, to implement a regulation that improves the decisions overall?

Quantifying the costs and benefits

- j) What is the expected net benefit of the regulation to the vulnerable?
- k) What is the expected costs to the sophisticated?
- l) What is the expected administrative cost of the regulation?
- m) What is the expected cost imposed on firms by the regulation, including the cost of lost profits?
- n) What is the best estimate of net benefit of the regulation?

106. Another area where behavioural economics may help shape regulatory analysis is environmental protection. As discussed above, research on social norms shows that we are sometimes better at cooperating in tragedies of the common than would be expected if we were simply self-interested and that regulations that create material incentives to behave well can sometimes undermine social norms, and thus have a muted or even negative impact. If an imperfectly designed or implemented regulation is worse than no regulation, one option is of course to do nothing. Another is to strengthen the regulation or its enforcement so that the material incentives it creates are strong enough to compensate for any reduction in people's propensity to cooperate voluntarily. A third is to design and introduce the regulation in a way that promotes social norms. An example of a regulation that is apparently successful in this respect is an Irish levy on plastic bags provided by shops. Designed mainly to reduced visual pollution, the levy was introduced after extensive consultation and publicity, and seems to have been effective not only because it increased the price of the bags to consumers but also because it helped create a norm against unnecessary use of bags.⁵⁵

107. More generally, Gintis et al (2005, 4) argue that the design of regulation must take account of possible interactions between material incentives and social norms:

⁵⁵ See Convery, McDonnell, and Ferreira (2007). A recently imposed tax of 5 US cents a bag in the District of Columbia has been said to be effective despite its small value for another behavioural-economic reason, discussed by Ariely (2010, ch. 3), namely the salience of the difference between a zero price and any positive price.

In 1754, five years before the appearance of [Adam] Smith's *Theory of Moral Sentiments*, David Hume advised 'that, in contriving any system of government ... every man ought to be supposed to be a knave, and to have no other end, in all his actions, than his private interest....' However, if individuals are sometimes given to the honourable sentiments about which Smith wrote, prudence recommends an alternative dictum: *Effective policies are those that support socially valued outcomes not only by harnessing selfish motives to socially valued ends, but also by evoking, cultivating, and empowering public-spirited motives.*

108. The challenge is to work out how to do that, while keeping in mind that regulation needs to be able to cope with knaves in the regulated population and the possibility of knaves among the regulators. Although clear-cut solutions do not appear to be available, the research suggests that governments should be wary of implementing regulations that don't enjoy reasonably widespread support and that it should use consultation to build support for regulations, being willing to compromise on what seems to be the best scheme if opposition reflects popular opinion, not just the views of well-organized interests.

109. A risk with requirements for regulatory analysis is that they create extra work without changing decisions and are therefore viewed merely as box-ticking exercises. Research on social norms and intrinsic motivation suggests that this is particularly likely if the requirements are externally imposed and run counter to traditional practice. Research on confirmation bias suggests that requirements for analysis that are applied after officials have reached a view may be especially ineffective. Together, the two lines of research suggest that mandatory regulatory impact analyses undertaken shortly before the submission of a proposal to

Cabinet should be supplemented by critical analysis early in the development of regulation, but that this analysis should not be a formal requirement, but rather something encouraged by skilful management.

110. There is also a case for general-purpose debiasing of regulatory decisions, that is, for training courses designed to help officials and ministers make better judgments and decisions. Effective debiasing appears to be difficult, but there is some evidence that awareness of biases and consideration of their effect during decision-making can improve decisions. Bazerman and Moore (2009) is a text written with debiasing in mind. Table 4 sets out a list of debiasing questions that officials might consider at some point in the development of a regulation.

Table 4 Debiasing questions for developers of regulation

- a) Is the evidence for the problem based on a sample that is large enough to draw conclusions from?
- b) Are we likely to be giving too much weight to a problem because of its vividness or recent prominence in the media?
- c) What problems might we be ignoring because they are not salient?
- d) Does hindsight bias make the problem seem obvious when it is not?
- e) Do we dislike a proposal for change because we are suffering from status quo bias?
- f) Does the preferred option still look the best if we frame the choice differently?
- g) Are we overconfident in our judgments about the problem and the possible solutions?
- h) Suppose the regulation fails: what is the most likely reason for its failure?

111. A debiasing device that has proved popular with some businesses is the project premortem, in which it is assumed that a project has failed and reasons for its hypothetical failure are sought (Klein 2007). The idea is that this makes it easier for dissenters to point out the project's weaknesses, especially if it has high-level support. Policy development in New Zealand usually succeeds in bringing arguments against new policies into the open, in part because consultation ensures that those who expect to lose from a regulation have an opportunity to state their case. But there may still be value in fostering internal debate by means of a regulatory pre-mortem. A policy team could be asked to suppose that a regulation had failed to achieve its stated aim and to speculate on what had hypothetically gone wrong. Analogously, policy ministries might periodically hold internal inquiries designed to elicit views on missing or inadequate regulations. Analysts could be asked to imagine that a scandal had occurred that had revealed a gap or shortcoming in existing regulation and then given a chance to identify that gap or shortcoming.

112. Finally, because judgements about the effects of regulation are difficult, we are likely to be overconfident about them. Regulation is often the subject of strong disagreement, partly reflecting differences in values, but also reflecting differences over the facts. Both the supporters and the opponents of a regulation probably overestimate the strength of their case. Knowledge of the tendency to be overconfident may encourage more empirical testing of proposed regulations, in laboratory experiments or randomized field trials. Experiments can't answer all relevant questions, including questions about the effect of policies on social norms. They also conflict both with the view that all citizens should receive equal treatment and with the desire of policymakers to appear knowledgeable. But the debate about KiwiSaver, for

example, would now be more informed if trials had shed light on the effectiveness of, among other things, default enrolment without subsidies.

Conclusion

113. Psychologists and behavioural economics have by now presented enough evidence to demonstrate that human behaviour deviates systematically from the rationality assumed by neoclassical economics and the self-interest assumed in many of its applications. The nature and extent of the deviations will remain a matter of debate for many years to come, but the existing findings can already help inform the design of regulation. Among other things, they suggest greater use of simpler information disclosure, carefully chosen default options, and devices that impose a delay between the impulse to borrow or gamble (say) and the ability to do so. It doesn't follow that neoclassical economics can be ignored in the design of regulation. In many areas it remains the best or only economic theory available. However, the evidence against neoclassical economics—and the absence of any behavioural-economic theory of comparable scope—do imply that more weight should be given to empirical testing in the design and evaluation of regulation.

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