Institute for Fiscal Studies

Tax and benefit policy: insights from behavioural economics

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Preface

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Executive summary

Behavioural economics is increasingly being used to inform and develop policy interventions. Perhaps the most visible use of behavioural economics has been the development of 'nudge' policies, drawing on the work of Thaler and Sunstein (*Nudge: Improving Decisions about Health, Wealth and Happiness*, 2008). Such policies stress that changing the way choices are presented, or changing the environment in which decisions are made, can substantially alter behaviour. Nudges have particular appeal both because they can be relatively inexpensive to implement whilst still affecting outcomes and because in principle they do not impede individual freedom to make particular decisions. In the UK, the Behavioural Insights Team was established shortly after the 2010 general election. It has since produced several reports largely (though not exclusively) exploring the potential use of nudges in different policy areas including health and energy use.

However, the lessons from behavioural economics run deeper than nudging alone and have enormous implications for more traditional policy levers as well. This report highlights this point through a detailed examination of the behavioural insights for tax and benefit policy. We focus on four aspects of tax and benefit policy: (1) raising revenues efficiently and minimising economic distortions; (2) policies to 'correct' behaviour; (3) redistribution of income; and (4) minimising fraud and error.

Behavioural insights for economic models of decision-making

Ideas from behavioural economics have helped develop the traditional economic choice framework, in which people are assumed to make choices that are rational, self-interested and consistent. Drawing on a body of evidence that this is not always the case, behavioural models suggest different, often richer, assumptions which make the predictions of the model align more closely to observed outcomes and help to explain patterns of behaviour not easily compatible with the standard approach. Some of the most important behavioural insights for tax and benefit policy include:

- **Bounded rationality** Faced with complicated decisions, people may resort to making choices according to some simple 'heuristics' or 'rules of thumb', which are often approximately optimal (in that they maximise welfare) but might in some cases lead to poor choices.
- **Framing** There is enormous evidence that how choices are presented affects outcomes. The environment in which decisions are made could provide *cues* to make particular choices, or some aspects of the choice problem may be more or less *salient* to consumers. Framing may matter if consumers engage in *mental accounting*, whereby income and spending are divided into separate 'pots'. Policies that somehow label money for one pot or another can affect what people choose to do with it.
- **Social preferences** Individuals appear to care not just about their own outcomes but also about those of others. This might be because people derive value from *fairness*, from *co-operation* or from conforming to *social norms*. These motivations could give intrinsic incentives to make particular choices. It is possible that providing extrinsic incentives (such as taxes, fines or rewards) could *crowd out* desirable behaviour.
- **Temptation** Consumers may have to exercise costly *self-control* to make certain choices such as eating healthily or giving up smoking. *Commitment devices* to help overcome self-control problems are therefore valued – for example, raising the cost of tempting choices (increasing cigarette taxes, say).

- **Prospect theory** When making choices with uncertain outcomes, evidence suggests a number of behavioural features. First, people attach subjective *decision weights* to each outcome and these may differ from objective measures of probability. Second, outcomes are measured against a *reference point*, rather than in absolute terms. Third, people exhibit *loss aversion*, where outcomes that are losses relative to the reference point are felt more strongly than equivalent gains. Fourth, people have *diminishing sensitivity* – the welfare increase from ever-bigger gains falls, as does the welfare cost from ever-bigger losses – meaning that people appear to be risk-seekers when it comes to losses.
- **Time inconsistency** There is considerable evidence that how people value the future changes with the passage of time. In particular, in models of *hyperbolic discounting*, people exhibit *present bias*, preferring immediate gratification but being happy to postpone more distant rewards. This means that people make plans they find it hard to stick to; present bias is related to the idea of *procrastination*. People may also make choices under the assumption that their preferences will not change in the future, a phenomenon known as *projection bias*.

Implications: the case for intervention

For policymakers, these 'biases' have important implications for why behaviour-change interventions may be necessary. Behavioural insights provide new reasons to intervene – issues of self-control, for example. But they also help shape how we think about traditional rationales for intervention, which typically look at cases of *market failure*, where outcomes are suboptimal from the perspective of individuals, society or both.

A common failure is the case of *externalities*, when individual choices generate costs (or benefits) for others. Since these are not taken into account in private decision-making, from a social perspective there is too much (or too little) of the activity. In this case, taxes or subsidies can help align private and social incentives. Behavioural economics suggests three important insights for externalities:

- Some people may take account of how their behaviour affects others if social preferences are important. This means that private decisions are closer to the social optimum, reducing the need for corrective taxes or subsidies.
- With time inconsistency, externalities can arise not just because of how someone affects the well-being of others, but also through how decisions made today affect the individual in the future. This is known as an *internality*.
- In some situations, the behaviour of others can act as a cue affecting individual choices in ways they may later regret, perhaps increasing the costs of self-control (whether to drink in certain social situations, for example). This suggests new sources of externalities when framing and temptation effects are important.

Another set of failures revolve around *information problems*. In particular, if buyers and sellers have different information, markets may fail altogether. The classic case is *adverse selection* in insurance markets, when those most likely to claim are those most likely to demand insurance, meaning providers are unwilling to insure them. These issues may help explain why private insurance markets for unemployment are relatively uncommon, for example, and thus rationalise the need for benefits as a form of social insurance. However, if boundedly-rational people find it hard to act on their private information, then adverse selection may be less problematic. Similarly, the problem of *moral hazard*, where having insurance leads people to engage in behaviours that make them more likely to claim, may be less acute if people behave according to social norms.

Implications for tax and benefit policy

Raising revenues efficiently

Financing public spending means governments need to raise revenue: receipts stood at more than £570 billion in 2011–12. Doing so in the most efficient way is clearly desirable and could lead to very substantial welfare gains. The inefficiencies from taxation come from the wedges driven between the prices that consumers are willing to pay and the prices that producers are willing to accept and between the wages firms are willing to pay and the wages workers are willing to accept. These wedges distort consumption patterns or the amount that people work. To a large extent, the efficiency costs depend on how responsive people are – the greater the response to taxation, the greater is the behavioural distortion and the less revenue is raised.

Different behavioural biases might reduce responsiveness. Some examples are:

- **Bounded rationality** People may have difficulty understanding the tax system. A common issue seems to be confusion between *average* and *marginal* tax rates; in principle, it is the latter that should guide choices, but evidence suggests that many people respond to average rates instead, which could lead them to work more than standard models would imply.
- **Framing** Some forms of taxation may not be very salient, reducing how responsive people are to them. Salience might be related to how the tax is presented or labelled. Taxes that are paid automatically rather than out of pocket may be less salient.
- **Time inconsistency** Some tax payments may be seen as more distant liabilities. As a result, people could respond less to pre-announced tax changes than would be expected, or more to taxes on income than on consumption.
- **Social preferences** People may have an intrinsic willingness to pay tax or be more willing to pay taxes if they believe the revenues are used for purposes they support. However, in general, the economic case for hypothecated taxes is weak, so caution should be used in justifying them for behavioural reasons.

In general, though, it is not clear whether these biases affect short- or long-run responsiveness to taxation in different ways.

These insights suggest a number of particular policy implications:

- Tax credits to encourage people back to work interact with labour taxes and the withdrawal of means-tested benefits, making the implications of labour supply decisions hard to understand. This could affect how people respond to them.
- It may be tempting to try to make aspects of taxation less salient to reduce how much consumers respond and thus to increase revenues. However, doing so risks imposing direct costs on consumers, could introduce other costs of complexity and tax avoidance, and might have negative distributional implications.
- Technology is helping to make auto-payment the norm in many instances (for example, in congestion charging), which might then reduce tax salience.

Corrective taxation

Almost 11 per cent of revenues are generated from taxes that broadly attempt to help people make the 'right' consumption choices. Key behavioural insights are:

- **Time inconsistency** People may fail to consume goods with long-term benefits but high up-front costs, despite intentions to do so. Taxes and subsidies may help consumers follow through on their plans if they act as commitment mechanisms. There is evidence from the US

that smokers are made relatively happier when cigarette taxes rise, for example. Up-front taxes may also have bigger effects than equivalent taxes deferred to the future.

- **Bounded rationality** Particularly for young people, consuming risky goods such as tobacco may be based on over-optimistic views about the likelihood of quitting.
- **Framing** Consumers appear to respond to the composition and presentation of prices. There is also evidence that simply labelling something as a 'tax' can affect how people respond to it.
- **Prospect theory** Loss-averse consumers would respond more to a tax (a loss) than an equivalent subsidy (a gain). Financial incentives might affect outcomes in part through how they affect reference points. One under-explored issue is whether consumers adapt to taxes over time by incorporating them into reference points, meaning they become less effective unless the rates are changed frequently. Another issue is whether providing corrective subsidies to encourage consumption of one good leads to an expectation of similar incentives as a prerequisite for behaviour change in other areas.
- **Social preferences** Consumers may be willing, at least in part, to self-internalise the external costs they impose on others. This might reduce the optimal corrective tax rate, though there is little empirical evidence on how important this is and the implications for taxes will depend precisely on how social preferences manifest themselves for individual welfare. Further, taxes may crowd out intrinsic incentives to 'behave well' and be a way of legitimising particular behaviours. However, it is also possible that the label 'tax' acts as a social signal of disapproval, which would work in the opposite direction.

Some particular policy implications of these issues include:

- Many goods where the benefits are more distant relative to the costs – healthy foods, education and so on – are examples of 'merit goods'. Behavioural economics may therefore give a clearer rationale for using taxes to promote their consumption than the standard economic model.
- There is evidence from the US that optimal 'internality-correcting' tobacco taxes may be larger than those justified by the external costs alone.
- The case for using tax incentives based on bounded rationality is less clear-cut than the case for more targeted interventions such as legal drinking/smoking ages and focused information campaigns.
- Vehicle excise duty is an annual tax on those owning road vehicles and is based on carbon emissions. A single up-front purchase tax might be more effective at influencing purchase decisions if people fail to account for future tax liabilities.
- US evidence suggests that demand for vehicle fuel falls more when fuel taxes rise than when pre-tax prices rise. This might mean that the optimal rate of fuel duty is lower than implied by elasticity estimates derived from pre-tax price changes.
- Making taxes more salient could substitute for increases in the tax rate. Care should be taken in trying to manipulate the salience of corrective taxes: corrective taxes that are not salient will not be corrective!
- Under emissions trading schemes, those who own carbon permits may value them differently from those who have to buy them, creating an endowment effect. This would mean that the initial distribution of permits partly dictates who ends up holding them, in contrast to standard theory. Such issues should be considered if ever the idea of personal carbon trading is revived.

- Carbon taxes may help people to commit to installing energy-efficiency measures where the returns are far distant. At the same time, promising to raise carbon prices in the future may be relatively ineffective at changing current behaviour, in particular if carbon pricing is not very salient. In any move towards carbon taxes, care should be taken that intrinsic motivations to reduce emissions are not crowded out.

Redistribution

Redistribution of income from rich to poor is one of the most significant aspects of tax and benefit policy, leading to a substantial compression of the post-tax income distribution relative to the pre-tax distribution. The distributional effect of behavioural insights appears to be a relatively under-researched area, yet it is potentially very important. If behavioural biases lead to welfare costs, these are likely to be more significant for low-income households, who have less scope to deal with them. Behavioural economics has a number of implications:

- **Bounded rationality** If people find it hard to process complicated information, introducing 'ordeals' into the process of claiming benefits could deter fraudulent claims. However, simply making the process of claiming more arduous seems a poor way to target payments effectively.
- **Framing** Mental accounting suggests that the 'label' attached to benefits, or providing benefits in kind rather than as cash, can affect consumption patterns. The distributional impact of particular taxes will also depend in part on how attentive rich and poor households are to them.
- **Time inconsistency** The frequency with which benefits are paid can matter. Benefits paid in larger, infrequent amounts could help people to budget but might lead to self-control problems as well. US evidence finds that those who rely on benefits consume fewer calories just before receiving them than just after. If time inconsistency leads to taxation being valued as a commitment mechanism, this may be more significant for poorer households than for richer ones and mean that, in some cases, tax increases will be more progressive than implied by standard models. Procrastination (or over-optimism) could blunt the incentives people face to search for work when unemployed.
- **Social preferences** People may benefit directly from greater equality. There is laboratory evidence that people consider how their outcomes compare with those of others, and models show that optimal taxes become more progressive when people care about how their outcome relates to outcomes on average. But stated preferences for redistribution appear susceptible to framing effects.

A number of particular policy insights are:

- If the intention of benefit payments is in part to influence how people spend their money, naming benefits in particular ways may be effective. There is evidence that Winter Fuel Payments are spent disproportionately on energy, for example. If this is not the intention, then policymakers need to be wary of unintentional frames for benefit payments which affect how they are used.
- Policies such as In-Work Credit that provide up-front bonuses to people when they start work could be effective when incentives to search are limited by time inconsistency.

- The proposed introduction of Universal Credit in 2013 should be informed by behavioural economics. By making means-tested support more straightforward, it could affect how boundedly-rational consumers respond. Labelling the policy as a 'credit' to which everyone is 'universally' entitled could affect perceptions of benefit receipt or benefit recipients in general, perhaps reducing stigma costs. Replacing 'passported' benefits, such as free eye tests and free school meals, with unlabelled cash payments in the move to Universal Credit may well have an impact on recipients' spending choices and this ought to be considered.
- Plans to 'auto-enrol' people into workplace pensions saving from October 2012 were inspired by behavioural ideas such as default effects. There is enormous evidence that such policies encourage people to start pension plans more quickly, but also that the specifics of the default scheme matter hugely, meaning that some people end up saving less than they would under an opt-in scheme.

Tax compliance

The 'tax gap' – the difference between tax revenues collected and those that were due – was estimated at around £35 billion in 2009–10. Lessons from behavioural economics about why people do and do not comply with tax law could be important in designing interventions to reduce the gap. Evidence from lab and field trials of behaviourally-inspired interventions to improve compliance has shown some encouraging effects. However, there appears to be more to do to understand whether such interventions can engender genuine long-term behavioural responses and to ascertain the direction of causality between behavioural factors and compliance. Examples of behavioural insights are:

- **Bounded rationality** The relationship between tax complexity and tax compliance is theoretically ambiguous, and empirical evidence is mixed. Complexity may increase the scope for non-compliance (if, say, different forms of income are taxed at different rates) or raise the hassle costs of compliance. On the other hand, more complex systems could make it easier for tax authorities to spot irregularities in tax records.
- **Social preferences** Social factors appear to affect compliance: fairness and morality are cited at least as often as the threat of detection or the penalties from being caught as reasons to comply with tax law. There is evidence that people respond to messages that other people pay their taxes on time. There seems to be less effect, though, of making general moral appeals to people to pay tax. The evidence for whether the relationship between tax authorities and taxpayers (known as 'tax morale') affects compliance is also rather limited.
- **Prospect theory** People may comply because they overestimate the likelihood of being caught and the punishments that result.

Some particular policy suggestions from these insights include:

- Compliance may be increased by making the tax assessment process more straightforward. Pre-populating tax returns for those who use self-assessment is one option, though in principle this also makes it clear where tax authorities have little information on people's true incomes, perhaps giving potential evaders more confidence to misreport particular income sources. There is little empirical evidence on this issue.
- Messages relying on social preferences to encourage compliance may be more effective if the comparison group can be made more personal to the individual taxpayer – perhaps citing compliance in a local area rather than nationwide.

- If individuals overestimate the likelihood of detection, then trying to influence how they perceive the chance of audit (perhaps through drawing attention to high-profile cases of uncovered evasion) could be a useful policy tool.
- Under prospect theory, increasing audit rates may be less effective than anticipated if the increase in objective risks is not fully reflected in subjective perceptions.
- Advanced payments – paying tax up front and then receiving a refund upon calculating actual liabilities – could reduce evasion if people are unwilling to risk potential gains, though it may be hard to implement when most people pay taxes at source.

Implications for other forms of intervention

Aside from tax and benefit policy, behavioural insights are also important for other types of intervention. Regulation and information are 'traditional' policy levers for which behavioural concepts have resonance, whilst nudges and de-biasing are new ways to intervene inspired directly from behavioural economics.

- **Regulation** Governments often require firms to disclose information to consumers. Behavioural insights suggest that it is not just *what* is disclosed that matters for choices, but also *how* information is provided, how *complex* it is to process and whether it allows consumers to make *social comparisons* of their choices with those of other people. If information can be provided in an unregulated fashion, firms may have incentives to *obfuscate*, making it hard for people to understand and react to it. However, there does appear to be a need for more empirical evidence on the extent to which firms are able to exploit consumer biases and how costly it is for them to do so.
- **Information provision** If governments engage in providing information and education, then how the information is framed will be important. The *messenger* appears to matter for how people respond, and whether the information is presented in ways that are understandable is clearly important. Of course, there is a trade-off for policymakers between information that is simple and information that is useful, particularly in trying to tailor different messages to different groups. The growing interest in *social marketing* for effective policy is an example of how behavioural insights are being used to improve information provision.
- **Nudging** In principle, nudges should not restrict choices or change the economic incentives that people face. Effective nudges can change the behaviour of 'biased' consumers without imposing costs on others, giving rise to the notion of *libertarian paternalism*. Whilst clearly an attractive concept, one concern is that if nudges work in part by imposing social stigma on particular behaviours, this in itself could be costly for people not directly affected. Further, the line between nudges and other interventions is not that clear-cut. Nudges often come with at least some form of information provision, or require regulation of firm behaviour. This might raise prices – nudges could have indirect effects on economic incentives.
- **De-biasing** Rather little attention has been given to the idea that governments may try to actively remove behavioural biases, despite evidence that they are not immutable. Whether using information campaigns to de-bias would be successful is not clear. Indeed, trying to do so might backfire in some cases: attempts to debunk myths have sometimes simply drawn attention and given credibility to them. Governments may also face stronger incentives to react to behavioural biases than to remove them. The idea of de-biasing is likely to be controversial and could be a priority for further evidence and research.

Conclusions

Behavioural insights have become increasingly influential amongst policymakers. Their use extends well beyond the potential for 'nudging', and thinking about these issues should not be neglected in the design of more traditional policy interventions.

Understanding the impact of behaviourally-inspired policy should, as far as possible, draw on rigorous evaluation, ideally trying to monitor both the intended and unintended consequences of policies on randomly-assigned treatment and control groups. Such methods are not always possible, so evaluation needs to be combined with other methods, including modelling based on alternative underlying assumptions about individual behaviour. Evidence-based policy is, of course, always desirable. Our assessment of the evidence for the importance of behavioural insights for tax policy suggests that there is, in general, good evidence that behavioural factors affect decision-making in ways that are important for making good tax policy. However, we found little UK-specific evidence and little evidence to allow us to draw out how wrong tax policy would be if these factors are not accounted for.

1. Introduction

In recent years, there has been a growing interest amongst policymakers in behavioural economics, drawing on insights from psychology and economics to help understand individual decision-making processes. Economics has traditionally viewed decision-making as a dispassionate weighing of costs and benefits. Ideas from psychology about the influence of the environment in which choices are made and the motivations that people face have, in some cases, helped to shape an alternative view of decision-making that has important implications for when, how and to what extent governments should intervene to try to change choices.

Much attention has been paid to the possible use of 'nudge' policies (Thaler and Sunstein, 2008), influencing choice through changing the choice environment or by playing on behavioural motivations. In some circumstances, it seems that substantial changes in behaviour can be generated from relatively simple, inexpensive policy interventions. There is also a view that nudges can be used to improve the well-being of those who are nudged without causing costs to those who do not need nudging.

However, to some extent, the 'nudge agenda' appears to have dominated the discussion as to what lessons can be drawn for policy from behavioural economics. The key aim of this report is to highlight a simple point: that the implications of behavioural economics for policy are wider than the use of nudges alone. Behavioural insights have important implications for more traditional policy instruments such as regulation, taxation and providing information or education. Indeed, conflating 'behavioural economics' with 'nudge' downplays the importance of behavioural ideas in developing good policy.

The Behavioural Insights Team (BIT) was established in the Cabinet Office in 2010, shortly after the general election, and has released a series of reports on a number of policy issues.[1] Its establishment followed the publication of the highly influential MINDSPACE report (Dolan et al., 2010), which set out clearly some of the main insights from economics and psychology to be considered in the design of policy. The popular profile of the BIT as the 'nudge unit' illustrates the way in which ideas around behavioural economics and 'nudge' have become so closely intertwined.[2]

The danger for policymakers would be a perception that behavioural economics has nothing to offer in thinking about wider interventions. This is not at all the view set out in MINDSPACE, which explicitly noted that behavioural theory means that 'the impact of existing tools such as incentives and information can be greatly enhanced by new evidence about how our behaviour is influenced' (p.8). However, the key point emphasised in the conclusions of MINDSPACE is that its insights 'can lead to low cost, low pain ways of nudging citizens – or ourselves – into new ways of acting' (p.73). Similarly, the 'behavioural insights toolkit' published by the Department for Transport (2011) makes reference to the possible applications of behavioural economics for non-nudge policy. However, it focuses much more heavily on the possible usefulness of behavioural approaches for 'the inclusion of relatively small-scale measures or "Nudges" to make [existing] approaches more effective' (p.3), rather than their usefulness for those existing approaches directly.

[1] Including health policy (Cabinet Office, 2010), 'consumer empowerment' (Department for Business, Innovation and Skills and Cabinet Office, 2011), energy use (Cabinet Office, 2011a) and tax fraud and error (Cabinet Office, 2012).

[2] It is worth emphasising that the Behavioural Insights Team does not simply advocate the use of nudge policies to drive behaviour change: for example, its 2010–11 annual update (Cabinet Office, 2011b) advocated various regulatory and other 'non-nudge' measures to reduce smoking rates inspired by behavioural economics models.

This report assesses the implications of behavioural economics for the use of fiscal instruments – taxes and benefits – to try to change people's behaviour. Fiscal policy is perhaps the most significant 'non-nudge' part of the policy toolkit: total tax receipts in 2012–13 are forecast to be just over £590 billion, or 38 per cent of national income. State benefits (including tax credits) make up the largest slice of total government expenditures: they are expected to be some £218 billion in 2012–13, or 31 per cent of total spending (Office for Budget Responsibility, 2012). The contribution that behavioural economics could make to good policymaking in these areas is therefore of huge importance.

We look at four broad aspects of tax and benefit policy:

- the efficiency costs of raising tax revenue;
- using 'corrective taxes' aimed at discouraging activities – such as smoking, drinking or polluting – that have social costs;
- issues around redistribution, both across individuals and within individuals across their lifetime (for example, using tax policy to encourage retirement saving);
- issues of tax compliance.

These might be thought of as the 'micro' aspects of tax and benefit policy – how they influence individual decision-making. We do not look at 'macro' aspects, such as using taxes as an economic stabiliser or fiscal stimulus, though in principle there may be lessons from behavioural economics here as well.[3]

Our intention is not at all to downplay the possible significance of nudges as a policy tool or to argue that the MINDSPACE agenda has no value for policymakers. Rather, we want to explore the wider lessons of behavioural economics in policy development. In the context of fiscal policy, this absolutely includes nudge-type policies (for example, how taxes or benefits are labelled or the frequency with which they are paid). But, as we detail in the chapters that follow, it also includes insights for 'traditional' policy issues such as how consumers respond to taxation and other price-based incentives (which has implications for setting tax rates at optimal levels), how willing people might be to support redistribution from rich to poor, and the extent to which people comply with the tax system. In this sense, our findings complement those of the House of Lords Science and Technology Committee (2011), in arguing that nudges alone cannot fully replace traditional interventions in driving behaviour change.

We do not aim to provide a completely comprehensive review of all the literature on behavioural economics or of all the behavioural models that have been developed. Rather, our intention is to focus on the main ideas that are likely to be of relevance for tax and benefit policy and to provide a clear and accessible account of them and their implications for policy.[4]

The report is structured as follows. Chapter 2 discusses economic models of decision-making, starting with the 'standard' model and introducing a number of key modifications inspired by behavioural economics which are of particular importance for tax and benefit policy. We also offer

[3] To give two examples: first, how tax rebates designed to stimulate growth are 'framed' (see Section 2.1) might affect the willingness of consumers to spend rather than save them (Epley et al., 2006); second, if people are 'loss averse' (see Section 2.2), then they may be unwilling to realise losses on assets such as housing, suggesting that stamp duty holidays during housing market downturns will be relatively ineffective, as the supply of houses offered for sale will be even lower than expected (Genesove and Mayer, 2001).

[4] The book by Congdon et al. (2011) examines behavioural economics and the field of 'public finance', which covers issues around taxation and redistribution. Its focus is somewhat more US-centric and its tone, while accessible, is a little more academic than our report. Interested readers are strongly advised to look at this freely-available publication for additional references and discussion. The highly-accessible paper by McCaffery and Slemrod (2004) also discusses some similar issues relating to behavioural economics and public finance.

broad evidence from lab and field studies suggesting that these phenomena are important drivers of choice; again, we do not intend to provide a comprehensive review of all this evidence, which is vast and continues to advance rapidly. Chapter 3 describes different types of policy intervention. We discuss how the methods of and rationale for intervention are affected by behavioural economics. Chapters 4 to 7 discuss ideas and evidence for how lessons from behavioural economics could affect the four areas of tax and benefit policy outlined above. Within each area, we provide examples specific to the current UK policy debate. We also offer an assessment of the empirical evidence for the importance of behavioural factors under each heading. Chapter 8 then offers some overall conclusions.

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2. Theories of decision-making in economics

Summary

Models of how people make decisions are of fundamental importance in policymaking, allowing predictions of the impact of different policies to be made. By definition, models have to be simplifications of the real world and make some assumptions about how people choose. The standard economic model assumes that choices are made in a consistent, rational and self-interested manner, based on the idea that people aim to maximise their utility in the face of a number of economic constraints, including prices and how much money they have to spend. Versions of this model are easily adapted to different situations, including cases where people make choices with uncertain outcomes and where decisions made today have enduring effects in the future.

Behavioural economics does not do away with the need to make simplifying assumptions when modelling choice. Instead, behaviourally-inspired models suggest alternative, often richer, assumptions which can help generate predictions more closely aligned to observed outcomes.

A number of behavioural ideas have been demonstrated to have resonance across a fairly wide range of domains of choice. These ideas include:

- **Bounded rationality** Faced with complicated decisions, people may resort to simple rules of thumb, which are often approximately 'correct' (utility-maximising) but might sometimes lead to poor choices.
- **Framing** Standard models do not allow the way choices are presented to impact on decisions made, but a large body of evidence suggests otherwise.
- **Social preferences** People appear to care not just about their own outcomes but also about what others around them choose and do and about how their outcomes differ from those of their peers.
- **Commitment** For a variety of reasons, including the possibility of temptation and the fact that how people weigh up the future against the present might change over time (time inconsistency), consumers often appear to demand ways to commit themselves to engage in particular behaviours later on.
- **Prospect theory** The way that people make choices when outcomes are uncertain seems to depend on how outcomes compare with a particular reference point, and in particular it seems that people are loss averse, feeling the pain of a loss much more than the benefit of an equivalent gain.

This chapter provides an overview of the 'standard' economic model of decision-making and how insights from behavioural economics have helped to modify and shape it in a number of different ways. At first, we frame the discussion around the choice by consumers of which good or set of goods to buy from a menu of available options. As we make clear, though, the model is much more general in its potential applications. We then look at how both standard and behavioural approaches have addressed two particularly important aspects of choice behaviour: allowing for decision-making with uncertain outcomes and where choices made today have an effect on outcomes in the future.

We discuss the issues in a relatively informal way, but we aim to guide interested readers by providing references to the seminal papers introducing different behavioural insights and to evidence that they matter for decision-making. The key message is that behavioural insights can

often be incorporated into economic approaches to decision-making, rather than representing a complete overhaul of how economists think about choice. This means that rather than simply being ex-post attempts to make sense of choices made in particular contexts, many behavioural ideas provide generalisable insights relevant to different policy-relevant cases, as we go on to explore in Chapters 4 to 7. Our discussion of behavioural ideas is not exhaustive but focuses in on those that have the most important implications for tax and benefit policy. The empirical literature on behavioural economics and the psychology of decision-making is large and growing, and we cannot hope to do it justice here. Accessible academic surveys can be found in Rabin (1998), Camerer et al. (2003) and DellaVigna (2009).

2.1 The 'standard' economic model of decision-making

Choice models are enormously important tools for policymakers. For instance, understanding how the demand for beer responds to changes in alcohol taxes allows the government to make forecasts of the revenue raised (or forgone) from a change in the tax rate. Behavioural insights have highlighted the limitations of what we term the 'standard' economic model in some cases. But, as the rest of this chapter describes, behavioural models of consumer choice do not dispense with the need for simplifying assumptions altogether, but rather suggest different, often richer, assumptions that make the model more realistic when compared with observed outcomes.

Before describing the standard approach to modelling choice in economics, it is worth making two key points:

- The model has generated a rich set of predictions on behaviour, such as how consumers respond to changes in relative prices and in incomes, which have been substantially validated by empirical evidence over many years.
- The simple model discussed below has been extended in a number of ways over time to account for wider aspects of economic decision-making such as search and information, habits and addiction, within-household resource allocation, and motivations for saving. Thus this 'standard' account, whilst the fundamental building block for economic choice theory, should not be seen as how economists model choice in all circumstances.

The simplest presentation of the standard model is to consider someone deciding which option to buy from a fixed, known set of alternatives – think of a consumer buying a loaf of bread from a supermarket shelf or someone in a restaurant picking a bottle of wine from the wine list. Each option has a **price** and the consumer has a certain amount of money (the **budget constraint**) to spend. Affordable options make up the consumer's **choice set**. The consumer has **preferences** over the options in the choice set. These preferences are represented in the model by a utility function: the consumer picks the choice that gives the highest **utility**.

Rather than thinking about the choice of buying a single good, the model can consider consumers buying bundles of goods – for example, a week's worth of food from the supermarket on a shopping trip. The principle is exactly the same: there is a budget for the total shop and the consumer chooses an affordable trolley-load of items from the shelves that generates the highest possible utility based on the consumer's preferences. The applications of the model also extend beyond this 'shopping' context. For example, we can think of people choosing between how much to work and how much leisure time to have. Working increases income, but has a utility cost if leisure is more enjoyable than work.

This general framework does not in itself provide a complete account of the 'standard' economic model. More fully, a number of additional assumptions are made, which in turn lead to a number of implications about how consumers behave. The main challenges to the standard model from

behavioural economics have come in terms of whether these assumptions are sensible or whether the implications hold. The most important assumptions challenged by behavioural insights are that:

- consumers behave in a **consistent** way; that is, faced with the same choice (the same choice set, constraints and preferences), they will reach the same decision;
- consumers are **rational**, meaning that they choose the best (utility-maximising) option in the face of the various constraints they face;
- consumers are **self-interested**. That is, their utility depends on what they choose, not the choices (or utility) of others.

Note that we have not made any statement about information here – for example, about whether or not consumers are fully informed about all the choices they face. The key point is that consumers do the best they can with the information available to them; that is, they are able to process and interpret the information. For example, they may know all of the weekly shops they could do in their local supermarket and be able to buy the best combination there. But they may not know about the prices and goods available at the supermarket in the next town unless they actively decided to go there and search for a better deal. This is perfectly compatible with the framework above, at least so long as we are prepared to accept that the decision to visit the next supermarket is in itself a 'rational' one, in the sense that the costs of making the search – driving further to the store, finding out all the information on prices and goods in that store and so on – are less than the benefits in terms of increased utility from doing so.[5]

The main implications of the standard model for decision-making are:

- For a given set of preferences, prices and budget constraint, the same choice will always be made. In other words, decisions are governed by these economic factors but not any other considerations – for example, it would not matter whether prices rose because of higher taxes or higher firm costs.
- Giving consumers more options (through lower prices, or higher budgets, or the introduction of new products) will only ever make them better off.
- Changing the choice set will not lead consumers to choose something that was previously available to them but was rejected. Adding a new option will lead to consumers either picking that (if it is better than their current choice and affordable) or sticking with their previous choice.

Key behavioural modifications to the standard model

In essence, we can think of the economic choice model having three key aspects: consumers **optimise** given their **preferences** and the **constraints** that they face. Behavioural economics has considered ways in which all three might be developed to give more realistic models of choice.

- People may not always pick the optimal (utility-maximising) choice, but may rely on simpler 'rules of thumb' in making decisions. This is sometimes called **bounded rationality**. Consumers make the best choice according to their particular decision rule. Often, but not always, this may accord closely with the utility-maximising ('fully rational') choice.

[5] The seminal paper on 'rational search' is Stigler (1961). The simple, intuitive idea is that searching (say for lower prices) is costly in terms of time, money and effort. Consumers will continue to search up to the point where the marginal cost of searching a little bit more is equal to the expected marginal benefit of doing so.

- Decisions may be guided not only by the standard economic constraints such as prices, incomes and information, but also by other factors such as how choices are **framed** or presented to them and other cues driven by the environment in which choices are made.
- Preferences may depend not only on the choices that the individual actually makes, but also on the choices that others make. In other words, there may be **social preferences** which affect decision-making, rather than the usual assumption of pure self-interest.
- The utility that is obtained from a particular decision could also be partly determined by choices that were rejected, meaning that changes in the choice set can affect outcomes. Models of **temptation** are one example of this.

Bounded rationality

Decision-making is frequently complicated. There may be many thousands of subtly different options from which to choose – savings accounts, food brands, holiday destinations, insurance policies and so on. Evaluating the pros and cons of each, even assuming that the consumer is perfectly informed about all the options, may be difficult and costly. For example, in terms of savings, there is evidence that many consumers do not understand compound interest, leading them to underestimate the future value of accumulated assets (Stango and Zinman, 2009). A response to complexity is to rely on alternative ways of making choices, often labelled '**heuristics**' or 'rules of thumb', which may often lead to approximately optimal choices but can, in some cases, generate poorer outcomes. There are many possible rules of thumb that could be relevant for decision-making in different contexts; a fuller account is given in Gigerenzer and Brighton (2009). The central idea is that heuristics are boundedly rational in that, whilst not all the available information is used in making decisions, the 'best' option according to whatever choice criteria are employed is chosen.

Shafir et al. (1993) look at experimental evidence for a number of decision heuristics they call **reason-based choice**. Given a desire to find a rationale for the choices they make, people may make decisions that are not consistent with the predictions of the standard model. For example, Shafir et al. point to numerous studies that show the 'preferred' outcome depends on whether people are asked to make a positive or a negative choice. They cite an experiment in which people imagine they are a juror in a custody trial and are given information about each parent in terms of a few key characteristics about their income, health, free time and so on. One parent is essentially 'average' on every criterion, whereas the other has a mix of very positive and very negative attributes relevant to child-rearing. The subjects are asked either to award custody to one parent (positively choosing the 'best' parent) or to deny custody to another (negatively rejecting the 'worst'). The parent with the mix of positive and negative attributes is most likely to be both chosen *and* rejected, with the hypothesis being that people want to find reasons to justify a choice and hone in on positive or negative characteristics whilst ignoring others.

Other rules of thumb include consumers only considering *some* options in the choice set, ruling others out on essentially arbitrary grounds – ignoring brands they have never tried before, for example. This reduces a choice set to a more manageable size. This is known as the **consideration set** – the part of the full choice set to which consumers actually pay attention. The standard model is then applied to the 'considered' set of alternatives in the usual way – consumers pick the best option from the consideration set, but this may not be the best choice from all possible options. A review of the theory and literature around consideration sets can be found in Roberts and Lattin (1997).

Consistent with the idea of costs associated with decision-making and a desire for fewer options, Iyengar and Lepper (2000) provide evidence for a phenomenon called **choice overload**. They find that while consumers seemed to like situations where they had more choice initially, in the end

they tended to be less satisfied with their eventual decision and suffered from a belief that they may have made the wrong choice. This suggests that, in some circumstances, consumers may prefer smaller choice sets – in contrast to the predictions of the standard model.

A further heuristic for choice is the concept of **satisficing** (Simon, 1955). In this model, consumers evaluate each option one by one and pick the first one that meets some satisfactory utility level. Clearly, the order in which options are considered can then affect the choice made. Manipulating this order could therefore influence decision-making. This idea is closely related to that of framing, to which we now turn.

Framing

In the standard model, choices are governed by consumer preferences over what is available and by economic constraints such as prices and incomes. How choices are presented or framed should not affect decision-making. However, a considerable body of evidence has built up to suggest that framing matters. DellaVigna (2009) discusses some of the evidence from both laboratory and field studies. Recent laboratory research carried out on behalf of the Office of Fair Trading (2010), for example, suggests that how price information is presented can significantly affect decision-making, even in an otherwise 'standard' choice situation.

If framing effects are important, then policymakers could affect decisions simply by altering how choices are presented or perceived. As detailed below, aspects of framing could include the prominence of different options in the choice set, and the wider environment in which choices are made, which might act as **cues** for making particular decisions.

Indeed, the choice set itself might be a frame. If consumers evaluate options against one another, changing the choice set by adding 'irrelevant' options could influence the outcome, in contrast to the predictions of the standard model. For example, Simonson (1989) discusses the concepts of **attraction** and **compromise**. Suppose that no option in the choice set is 'dominant' in the sense that it is better than all others along every relevant dimension. Then it seems that choices can be steered towards a particular option by adding some irrelevant alternative that is clearly inferior to it in every way. This is related to the idea of reason-based choice discussed earlier. By making one option better than an irrelevant other, it provides an attraction rationale to pick it, even if it is still not clearly better than a third option which was always available. Similarly, adding an extreme option that is not part of a feasible choice set can make another option appear to be a reasonable compromise and thus more likely to be chosen. For example, consider a consumer picking between a cheap, basic television and an expensive, advanced model. By adding a third, ultra high-end and incredibly expensive option that few people could realistically afford, the manufacturer can make the merely expensive television seem to be a good compromise. This might encourage some people who might otherwise have chosen the basic model to switch.

A related concept is that of **salience**: certain aspects of the choice problem might be more or less visible to the decision-maker, which affects their choice. By framing which aspects of choice are salient, the outcomes can be altered. For example, suppose that cars vary only according to their up-front price, colour and fuel efficiency. The price and colour may be very visible characteristics of the car whereas the fuel efficiency, which determines the running costs, may be less visible and thus less considered when choosing which car to buy. However, if running costs and purchase prices were required to be shown together on price labels, this change in the framing of the purchase decision could lead to different outcomes. Pashler et al. (2001) review psychological aspects of salience and what factors influence attention – for example, new choices may be more salient simply by being less familiar, or choices that have very distinct characteristics from other options may be more salient.

Another common framing effect is the **default effect** where the default option (whether in government policy or in some private transaction) is chosen more often than might be expected. There is considerable evidence of default effects in organ donation rates across countries, with those operating 'presumed consent' (a default of being an organ donor) having higher rates than those where people have to opt in to donation (Abadie and Gay, 2006). Defaults have also been hugely influential in the debate around retirement saving; we return to this issue in Chapter 6. Defaults might be stuck to for a number of reasons – for example, they may be more salient, or people may put more weight on the potential downside costs of switching from a default option (see Section 2.2 on loss aversion), or people may procrastinate in changing their mind (see Section 2.3).

Behaviour can often be influenced by first exposing individuals to certain cues, a phenomenon known as **priming**. In the standard model, these cues should not affect decision-making, but much research suggests this not to be the case. Kahneman and Tversky (1974) and Tversky and Kahneman (1981) provide several examples. One experiment asked subjects to guess the number of African countries that were members of the United Nations after first asking whether they thought the number of countries was greater or less than a random number ranging from 0 to 100. Guesses were found to be closely related to the random number. Ariely et al. (2003) found that valuations of goods can also be affected by first asking subjects whether they are willing to pay a certain price, which happens to be the last two digits of their social security number.

A final aspect of framing is the notion of **mental accounting** (see Thaler (1990 and 1999)). This is the idea that consumers mentally separate their incomes and expenditures into separate pots and are reluctant to shift money between them. When consumers reach the limit on the budget for one item, they will not spend money from other budgets to finance expenditure on that item (Heath and Soll, 1996) even if their overall well-being might be improved by doing so. This could mean that income could be spent very differently depending on whether it was received in a way that framed it as belonging to one mental account or another – for example, by attaching some arbitrary label to the income such as a 'bonus'. This is in contrast to the standard model, in which any additional income (a relaxation of the budget constraint) should have the same effect on spending decisions.

Social preferences

In the standard model, consumers are self-interested – that is, their utility depends on their own choices. However, there is a clear body of evidence that suggests that individuals care not only about their own outcomes but also about the outcomes of others and the relationship between the two. For example, the idea that people care about **fairness** or have altruistic motives has been repeatedly tested in laboratory studies of what is known as 'the dictator game'.[6] Someone is given an amount of money and is told they can share some or all of it with another, unknown person. The standard model would predict no sharing. Forsythe et al. (1994) find that 20 per cent of players offer a fifty–fifty split and more than half of players offer something to the other person. Interestingly, though, at least some of this result seems to be driven by fears that the experimenters themselves would judge the player harshly for offering nothing. Hoffman et al. (1994) carry out a version of the game in which the experimenter cannot know exactly who offers what (and in which the players know that this is the case) and find that 85 per cent of players offer no more than 10 per cent of the pot to someone else.[7] A related game is the 'ultimatum game' (see Oosterbeek et al.

[6] Of course, since the standard model does not incorporate altruism as a motivation for behaviour, then neither does it incorporate malice or spite as motivations in which making others worse off might actively make someone else better off. This possibility has received rather less attention in the literature than altruistic preferences!

[7] The Hoffman et al. study also reveals that the way in which the game is *framed* matters – for example, if there is a sense that the person making the offer has earned the entitlement to do so by winning a quiz, then offering nothing to the other player becomes more common.

(2004)), in which people have the right to refuse the offers that are made to them, where refusal results in neither party receiving any money. The standard result should be that all positive offers are accepted (since something is better than nothing), but typically some offers are rejected and the amount offered tends to be around 40 per cent of the overall pot. Fehr et al. (2005) summarise neurological evidence that people derive value from cooperation.

Further evidence for social preferences comes from studies that find that people take into account the impact of their actions on the welfare of others and adjust their behaviour accordingly. Bandiera et al. (2005), for example, study productivity amongst fruit pickers when the payment system changes from relative rewards (where the most productive worker receives the biggest payment) to a piece-rate system (where people are paid according to what they themselves pick). They find that, on average, productivity increases by around 50 per cent after the move to piece rates, suggesting that people deliberately reined in their productivity under the relative system to avoid penalising others. Importantly, they find that this effect is stronger if the group is made up of friends of the individual, when social preferences might be more likely to emerge. However, they also conclude that the results were probably driven less by pure altruism, and more by a collectively rational (if not explicitly discussed) decision by the group to reduce productivity under the relative system so that the same rewards could be obtained with less effort. Evidence for 'social preferences' was much weaker when it was impossible to monitor what other people in the group were picking under a relative reward scheme (and thus impossible to enforce any collective group behaviour).

If individual utility is at least partly determined by what other people do, or perceptions about what other people will think about our individual outcome, then there may be an **intrinsic** motivation for people to make certain choices – behaving well, helping others, not being too greedy and so on. An interesting question is the extent to which policies that provide so-called **extrinsic** motivations to behave in certain ways (more traditional 'carrots and sticks' such as taxes, fines and financial rewards), motivated by the standard choice model, might actually 'crowd out' these intrinsic motives, ameliorating the impact of the incentive and perhaps even leading to seemingly perverse outcomes. For example, Titmuss (1970) suggested that paying individuals for blood donation might crowd out any intrinsic motivations for what would otherwise be an altruistic act, and Mellström and Johannesson (2008) find empirical evidence for this in field experiments. A review of laboratory-based evidence can be found in Deci et al. (1999), who explore 128 studies. They find that 'tangible rewards' (such as cash payments) that are contingent on participating in or completing a task reduce intrinsic motivations significantly. However, they also find that 'verbal rewards' or positive feedback actually increase ('crowd in') intrinsic motivations. Gneezy et al. (2011) also review a number of studies, including field trials. They suggest that the form and framing of extrinsic incentives matter, and point out that there is little good evidence on whether crowding-out effects are short-term or have long-term repercussions for behaviour change.

Consumers may also conform to **social norms**. This may simply reflect the pleasure derived from following the crowd (or displeasure from standing out), but may also reflect bounded rationality in that what the majority does is perceived to be a reasonable choice (described in Gigerenzer and Brighton (2009) as the 'imitate the majority' heuristic). Evidence that social norms influence behaviour has been found in areas such as energy conservation (Allcott, 2011) and retirement saving (Beshears et al., 2011).

Temptation and commitment

We noted above that 'choice overload' might be one reason why adding extra options to a choice set might not improve consumer welfare. Another is if the utility of a particular choice depends in part on the options that are not picked. This possibility is a central feature of models of **temptation** and **self-control**. In Section 2.3, we will examine decision-making when choices have long-term

consequences and the notion of dynamic inconsistency – what consumers plan to do today is not always the action they carry out tomorrow when the time to make the choice comes. Temptation could be one reason this inconsistency arises. Think of someone planning a visit to a restaurant where there are two items on the dessert menu – fruit and chocolate cake. The diner may plan to choose the fruit, but when they get to the restaurant they find the cake too tempting and ultimately choose that instead. However, if people are aware of temptation problems, they may be able to exert self-control, at a cost, and instead pick the option that is less tempting but that is known to be 'better' for them. In this model, the consumer could actually be better off if the chocolate cake were not on the menu at all – if their choice set were smaller – because then they would not face the self-control costs.

The standard choice model was adapted by Gul and Pesendorfer (2001) to incorporate the ideas of temptation and self-control. Essentially, their model incorporates two innovations. First, consumers have two different sets of preferences, one that determines how 'tempting' each choice is and one that determines how they would evaluate each choice when no other options are available. Second, utility depends on the chosen option but also on the most tempting of the non-chosen options. The more tempting this is, the greater the costs of self-control needed to avoid picking it and the worse off is the consumer.

One of the key implications of this model is that consumers would be willing to pay for a **commitment device**, something that helps them avoid the costs of temptation and exercise self-control by restricting the choice set somehow. To return to the example above, imagine two restaurants that are identical except that one only offers fruit on the dessert menu at a price of £5, whilst the other offers fruit and cake at £4 each. In the standard model, the consumer would go to the second restaurant and pay £4 for fruit. In the temptation model, the consumer might be willing to go to the first restaurant and pay more for fruit to avoid the costs of being tempted by the cake. The extra pound they pay for the fruit is the commitment price they pay to avoid being tempted, assuming that the cost of self-control would be valued at more than £1.

Bryan et al. (2010) discuss other economic models that imply a preference for commitment and they survey lab, field and neurological evidence for this preference. For example, Bernheim and Rangel (2004) offer a model where consumers suffering from addiction binge on goods in response to certain environmental cues (such as advertising or the behaviour of others around them) and may therefore be willing to pay to avoid such cues. Other evidence for a preference for commitment is found in setting deadlines for completing assignments (Ariely and Wertenbroch, 2002) and signing contracts today to increase pension saving in the future (Bernartzi and Thaler, 2004).

2.2 Decision-making under uncertainty

The standard model

So far, the discussion of choice models has centred on cases in which outcomes are known for certain. People pick an option or a bundle of options and, in doing so, they know for sure what the utility from each choice will be.

In many situations, outcomes are not known for sure. When someone is deciding whether or not to buy a lottery ticket, they don't know whether they will win. Someone deciding whether or not to buy an umbrella doesn't know what the weather will be like for the rest of the year. Uncertainty itself, however, is not at all incompatible with standard economic modelling. If we simply replace the assumption that consumers maximise utility with one that they maximise their **expected**

utility, then essentially the same model can be used to analyse choices made under uncertainty.[8] There is some additional complexity, namely that consumers have to know the utility they will get from each possible outcome when they make a choice and be able to assign a probability that each outcome will occur.[9] Expected utility is simply what we get from adding up the results of multiplying utility from each possible outcome by the probability of that outcome occurring.

The development of expected utility theory goes back to von Neumann and Morgenstern (1944), who expressed the idea of consumers making choices over **gambles** or **lotteries**. For example, consumers can pick between many different lottery scratch cards, each costing £1 and giving some objective chances of winning prizes of different amounts. Many of the assumptions we discussed earlier underlying the standard choice model with certainty carry over to choices over gambles. Consumers are assumed to be able to rank all different possible gambles against one another and adding 'irrelevant' lotteries should not affect the choice of gamble that is made in the end.

A standard assumption (not just in the case of choice under uncertainty) is that the additional utility consumers derive from getting more and more of something gets smaller as they get more of it – diminishing marginal utility, as economists call it. The utility someone with an income of £100 per week gets from an extra pound is much higher than the utility someone with an income of £1,000 gets from another pound. This principle underlies one of the key insights of expected utility theory, that of **risk aversion**. Given the choice between a gamble that saw a prize of £100 if a coin came up heads and £0 if it came up tails, and a gamble in which the prize was £50 either way,[10] most people would choose the latter even though the expected winnings in each case are the same, £50. However, the point is that consumers do not evaluate gambles simply by the amount they are expected to win, but by the utility they expect from each gamble. Having £50 with certainty would give more utility than an equal risk of £100 or nothing, if the marginal utility of income is falling.

Behavioural insights: prospect theory

A large number of experimental papers have generated results that challenge the predictions of expected utility theory.[11] An alternative model, **prospect theory**, was put forward by Kahneman and Tversky (1979). An important feature of prospect theory is that rather than basing decisions on objective probabilities, people apply **decision weights** to each outcome, to form subjective transformations of objective probabilities. For whatever reason, people could (for example) overestimate the likelihood of low-probability events or underestimate the likelihood of high-probability events.

Prospect theory includes two other key features which appear to be relatively consistent with observed behaviour. First, people are assumed to evaluate choices relative to some **reference point** rather than in absolute terms. That is, decisions depend on how people's outcomes would

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[8] Expected utility theory imposes some additional structure compared with the 'choice under certainty' case, in particular about how consumers evaluate the utility of different gambles. A discussion can be found in most textbooks of microeconomic theory – see, for example, section 6 of Mas-Colell et al. (1995).

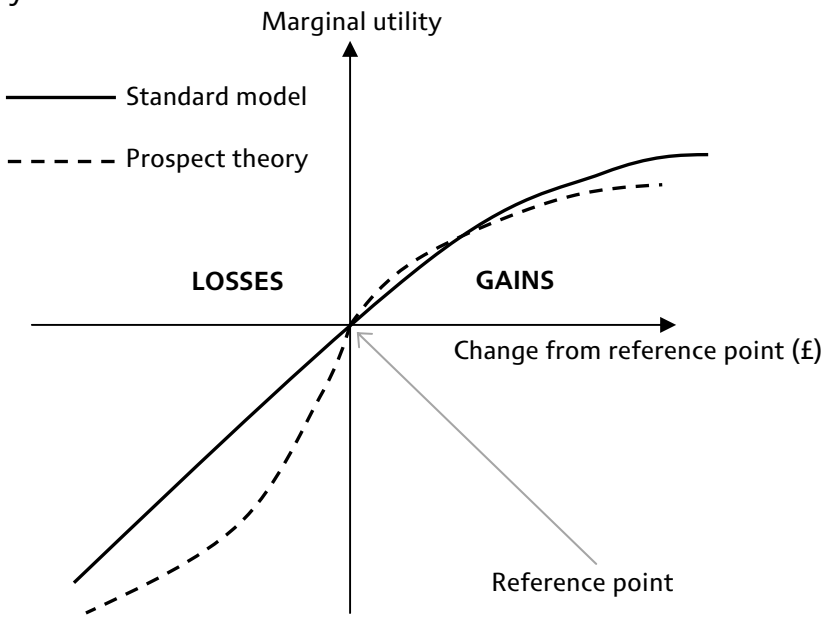
[9] In general, we should distinguish *risk* (where the probability of each outcome is known for sure, like the odds of tossing heads on an unbiased coin) from *uncertainty* (where the probabilities are not known objectively). When risky choices are made, we assume that people choose according to the objective probabilities. When uncertain choices are made, we assume that people assign subjective probabilities to each outcome. An interesting behavioural modification of the standard expected utility theory model, which we do not develop further here, is that people may derive utility directly from their subjective probabilities, and choose them in a way that makes them better off. For example, people may assign an unrealistically high probability to winning the lottery to enjoy the anticipation of winning. See Brunnermeier and Parker (2005) for a model of 'optimal expectations' incorporating beliefs into utility.

[10] We can think of this as a 'gamble' where the prize is certain – it is just assigning a probability of 100 per cent to a particular outcome and 0 per cent to all other possible outcomes.

[11] A detailed review of evidence for violations of expected utility theory and relevant behavioural insights is provided in Yaqub et al. (2009).

change in different circumstances, rather than on what the final outcome itself would be. This is counter to standard economic modelling. For example, imagine people are asked whether they would accept a gamble where they win £10 if a coin toss comes up heads and lose £10 if it comes up tails. For someone with £100 in their wallet at the time, the standard model would assume the gamble is treated as a 50:50 bet between having £110 or £90; for someone with £500, the gamble is between £490 and £510; and so on. However, under prospect theory, the gamble (or 'prospect') is between a gain of £10 from the current reference point (whatever money they have at the time) and a loss of £10.[12] The second additional feature of prospect theory is that of **loss aversion** – the idea that people do not treat gains and losses from the reference point in the same way. In particular, Kahneman and Tversky (1979) proposed that people feel greater 'pain' from a loss than from an equivalently-sized gain. They also argued that whilst, as in the standard model, the marginal utility obtained from each additional pound gained above the reference point gets smaller and smaller, so too does the marginal utility cost of each additional pound lost below the reference point. Figure 2.1 illustrates these concepts together to show the shape of the utility function under prospect theory compared with the usual shape assumed in standard expected utility models. Notably, the curve is steeper for losses than for gains, but as losses get larger the marginal utility loss gets smaller.

Figure 2.1. Marginal utility of money in different models of choice under uncertainty



There is considerable overlap between the ideas in prospect theory and the earlier discussion on framing effects. What is useful about prospect theory is that it can help to formalise *why* framing matters in the context of an economic model. When people are making decisions where the outcome is uncertain, how the choices are framed could have important effects if the frame changes the reference point or leads people to perceive decisions in terms of losses rather than gains. For example, in a famous experiment, Tversky and Kahneman (1981) set up a scenario in which an epidemic is expected to kill 600 people. Some subjects are asked to choose between two treatments: treatment A1 will save 200 people for sure, whilst treatment B1 will save everyone one-third of the time but save no-one two-thirds of the time. Other subjects are asked to choose

[12] Though this need not mean that the two people would treat the gamble in the same way – it may be that both the reference point itself and the changes around it matter for decisions.

between treatment A2 in which 400 people will die for sure and treatment B2 in which nobody dies one-third of the time but everybody dies two-thirds of the time. Clearly, the two sets of 'treatments' are the same, but the presentation of the choice matters – the majority choices are A1 and B2. In the first case, the problem is framed such that the 'reference point' is that everyone is dead and lives are saved, which is treated as a gain. In the second case, the reference point is that everyone is alive and lives are lost. This experiment is therefore evidence that losses and gains are treated differently.

Another example relating prospect theory and framing is the **endowment effect**. The amount of money someone is willing to pay to buy an object should be about the same as the amount they would need to be paid to sell it to someone else. However, experimental evidence (Kahneman et al., 1990) suggests this is not the case – people value objects they 'own' more than those they do not, even when this ownership is essentially arbitrarily determined in the experiment. Prospect theory helps to explain this result if selling something is seen as a loss from a new reference point of ownership whilst buying something is seen as a gain from a reference point of non-ownership.[13] The **default effect** discussed earlier could also be related to reference points. If the reference point is the current (default) choice, then making a different decision could lead people to weigh potential losses more heavily than potential gains, and so they might stick with the status quo more often than they 'should' under standard models.

Other evidence that prospect theory and loss aversion are important in explaining choices is summarised in a range of papers that look at lab and field evidence spanning different applications. These papers include Kahneman et al. (1991), Tversky and Kahneman (1992) and Camerer (2000).

2.3 Time and decision-making

Standard model

The discussion so far has focused on decisions with one-off effects: what I choose today gives some immediate utility. Yet, in many cases, decisions made today have effects on future outcomes. Choosing a high-fat dessert, or smoking now, or having an extra drink, may give a high immediate utility benefit but might have long-term negative consequences for health, for example.

The usual economic approach to these intertemporal decision problems is, essentially, a quite straightforward adaptation of the standard one-period model. A decision made today generates utility today and in future periods. Consumers are assumed, in effect, to add up the utility from all periods and, as usual, pick the option that gives the highest **lifetime utility**. Utility in the future is assumed to be discounted to some extent – that is, utility tomorrow is worth less than utility today, with far-distant utility worth less still. Consumers therefore pick the option that maximises total discounted utility.

The same framework can be applied to people choosing a 'plan' for current and future behaviour, selecting the plan that gives the highest total discounted utility. The most obvious application of this is in terms of decisions over how much to spend and how much to save. In life-cycle savings models, consumers plan how much to consume in different periods (say, each year of life) based on expectations about what their incomes will be in each period. People can save or borrow to transfer income across periods, with some expectation about what interest rates will be. As described in Section 2.2, the consumer faces diminishing marginal utility from each extra pound of consumption

[13] It is worth noting that there is some controversy in the literature as to whether the endowment effect is important, particularly in cases where people are able to make these sorts of trades in more realistic settings and when they gain more experience in doing so. A summary is given in section 2.2.3 of DellaVigna (2009).

in a particular period. This means that consumers want to shift consumption from periods where the marginal utility of consumption is low to periods where it is high, in order to maximise their whole lifetime utility. At its heart, this life-cycle model is very similar to the simple one-off consumption model described in Section 2.1. Consumers choose consumption levels in each period to maximise discounted lifetime utility, subject to the constraints of not spending more than their total lifetime income (rather than their within-period income) and the 'price' of saving or borrowing to shift spending across different periods.

The standard formulation of intertemporal decisions was given by Samuelson (1937). Of particular importance is the assumption that the discount rate is a constant. That is, suppose I value utility next year at 95 per cent as much as utility this year. Then it is also the case that utility in 2050 is valued at 95 per cent as much as utility in 2049. This is the notion of **time consistency**; evidence that this is a poor assumption has been at the heart of behavioural modifications to intertemporal decision-making, as we set out below. Under time consistency, plans that are optimal today will continue to be optimal in the future (assuming that nothing changes other than the passage of time – for example, there are no unanticipated changes in future incomes or interest rates) and so consumers will not later want to unravel their previous plans.

Behavioural insights: time inconsistency

A large evidence base suggests that the assumption of constant discount rates is flawed. In particular, it seems that the immediate future is discounted much more heavily than more distant periods. In other words, someone who prefers £100 in 100 days' time to £90 in 99 days' time might also prefer £90 today to £100 tomorrow. So if asked the same question 99 days later, the person would take the £90 rather than waiting the extra day – they would reverse their earlier preference. This time-inconsistent behaviour is not compatible with the standard model of intertemporal choice. Instead, it suggests that people are **present-biased** in their decision-making, preferring immediate gratification whilst being happy to postpone more-distant rewards.

Much of the experimental evidence for time inconsistency is summarised in section 4 of Frederick et al. (2002).[14] To quote one example they give, Thaler (1981) asks laboratory subjects to state how much money they would need to receive in a month, a year or 10 years in order to wait rather than receive $15 there and then. The results imply an annual discount rate of 19 per cent over 10 years or 345 per cent over one month. Evidence from field studies that suggests time-inconsistent behaviour is summarised in section 2.1 of DellaVigna (2009). Meier and Sprenger (2010) demonstrate that consumers who exhibit greater present bias in lab experiments are more likely to borrow on their credit cards and tend to be deeper in debt than other consumers. Thus time inconsistency appears to be correlated with important real-world behaviours.

From a policy perspective, one of the most important implications of time inconsistency is that people may make plans to which, ultimately, they find it hard to stay committed. For example, think of someone deciding whether to keep smoking or to quit. Smoking gives an immediate benefit with long-term costs. A present-biased person might discount the future costs quite heavily relative to the immediate benefits and so decide to smoke now. Looking ahead, though, they believe that in the future they will not discount even more distant costs relative to the future pleasure of smoking all that much, such that they plan to quit. When the future comes, they again find the immediate pleasure outweighs the now more heavily discounted future costs and so fail to carry out their plan to give up. O'Donoghue and Rabin (1999) relate this to the idea of **procrastination**. People put off tasks that have future rewards and immediate costs (such as exercise, housework or saving for

[14] It is worth noting that not all the studies highlighted in their review suggest time-inconsistent behaviour.

retirement), planning to do them later but not getting round to doing so. In contrast, they overindulge in tasks that have immediate rewards and future costs (such as smoking or unhealthy eating) in the belief that they will stop indulging in the future.

Of course, people may be aware of this inconsistent behaviour. Models of time inconsistency often refer to 'sophisticated' consumers who recognise that in the future their valuation of plans made today will change. If so, they may seek out commitment devices that restrict their ability to undo current plans in the future. We discussed commitment in Section 2.1 in the context of temptation models. Time inconsistency gives another reason why consumers might seek to limit their future behaviour.[15]

Another reason people may make time-inconsistent choices is **projection bias** (Loewenstein et al., 2003). When making decisions that have long-term implications, people may assume that their current preferences will be the same in the future. If, in fact, preferences change, then they may wish to undo earlier decisions. For example, if people go shopping when they are hungry, they may buy more food or different types of food than they would actually like to have in the house when their appetite is sated. Lowenstein et al. discuss other examples of projection bias in the context of a simple economic model. Here, time inconsistency arises because people fail to accurately forecast future preferences, rather than future discount rates. This idea is related to the Bernheim and Rangel (2004) model discussed earlier, that people may have different preferences when faced with particular cues, which lead to time-inconsistent behaviour.

2.4 Conclusions

The 'standard' economic model of choice has generated important insights which have been empirically tested and demonstrated many times. It is widely applicable across many aspects of behaviour: not only a simple one-off choice of what to buy, but also cases where people make decisions without knowing for certain what the outcomes will be and where current actions have future impacts. For all these reasons, economic modelling will remain a hugely important tool for policymakers.

As with any attempts to model human behaviour, though, the standard economic model imposes a number of very simplifying assumptions, which in turn lead to implications that are not always appealing or in tune with observable evidence on how people make decisions. Behavioural economics has, over time, led to a number of adaptations of the standard model. Whilst not removing the need to make assumptions, these behavioural adaptations have helped generate predictions that often appear to accord more closely to observed outcomes. For policymakers concerned with predicting the impact of particular legislation, this is extremely beneficial.

Importantly, many of the behavioural ideas we have outlined in this chapter are not just attempts to rationalise ex post why people did not behave as the standard model predicted in a given situation. Rather, they build on the standard economic framework to incorporate aspects of behaviour that

[15] There are important differences between the temptation and time inconsistency models set out in this chapter. The temptation model allows consumers to exercise self-control (at a cost), but notes that commitment devices that remove tempting options from the choice set can raise overall welfare. In the time inconsistency model, consumers cannot exercise self-control other than by restricting their future behaviour. The temptation model also posits a single utility function (made up of 'temptation' and 'standard' preferences). The time inconsistency model is often discussed in terms of 'multiple selves' in which changing preferences are seen as different individuals with different utility functions. The challenge for a sophisticated consumer is then to restrict the behaviour of their own future self to avoid an outcome that is optimal in the future but not in the present. One issue with this view is that it is not always clear for policymakers which 'self' matters most when thinking about the welfare consequences of interventions. For example, banning cigarette smoking in pubs might benefit the 'long-run' self of a smoker who plans but fails to give up, but is costly for the 'short-run' self of a smoker. A brief discussion of this issue can be found in Poterba (2009).

might have important repercussions for decision-making across a range of contexts. Included are ideas such as time inconsistency, loss aversion and reference points as well as framing, social preferences, temptation and bounded rationality as influences on behaviour.

However, it is worth sounding a note of caution. It is clear that these 'behavioural biases' affect behaviour in many different domains. Chapters 4 to 7 will discuss evidence for this in the context of tax and benefit policy. What is *not* clear is that evidence from one particular context translates into different policy contexts. People may stick to a default 'opt-in' to organ donation, something which perhaps few people pay much attention to. This need not mean they would stick to defaults in other contexts, such as regulating restaurants to provide salad as a default meal accompaniment rather than chips. Empirical findings can, of course, inspire policy proposals in other areas, but this does not obviate the need for robust evidence that the policy has in fact had the desired effect. We say more about the importance of evaluation in the overall conclusions in Chapter 8.

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3. Policy interventions: lessons from behavioural economics for why and how to intervene

Summary

Behavioural insights suggest a number of lessons in thinking about **market failures** as a rationale for government intervention in private decision-making. These include:

- **Externalities** If consumers have social preferences, they may voluntarily try to adjust their behaviour to account for any impact their decisions have on other people, ameliorating the need to use taxes or subsidies to bring private and social incentives into line. In addition, new forms of externality might emerge if other people's choices directly impact individual utility or if people fail to account for how their decisions today might affect their future utility.
- **Information problems** Market failures associated with imperfect information could be made worse if some boundedly-rational consumers are exploited by other consumers or firms. On the other hand, if people cannot act on or process information, or if they find their behaviour partly governed by social preferences, traditional concerns about moral hazard and adverse selection may be less acute.

These insights are also important in thinking about the form of intervention, including for traditional levers such as regulation and education. In particular:

- **Regulation** may be justified if firms engage in behaviour that tries to exploit consumer behavioural biases. Such biases might even sustain markets which actively damage consumer interests. Even without this justification, behavioural insights suggest ways in which regulatory policy might be made more effective, such as mandating what information firms disclose and how it is presented.
- How **information** provided by governments and firms is framed and presented can affect how consumers perceive and respond to it. Information can also help reinforce or change social norms, which in turn influence behaviour.

New forms of intervention are also suggested by behavioural economics:

- **Nudges** are the most high-profile example of new, behaviourally-inspired policy tools. In principle, nudges should not affect traditional economic incentives such as prices, incomes or the choices available to consumers. Nudges are therefore incompatible with consumer regulation or taxation, for example. However, in practice, many examples of so-called nudges also rely at least partly on firm-level regulation, which might in turn affect prices.
- If there is concern that consumers make poor decisions because of behavioural biases, policymakers may want to try actively to **de-bias** decision-making to improve outcomes. Whilst there is evidence that biases are not immutable, there is as yet little compelling evidence on whether policy can actually affect them.

This chapter considers how the behavioural insights we discussed in Chapter 2 might affect the rationale for and type of interventions policymakers might consider. We outline ways in which behavioural ideas affect 'traditional' interventions such as regulation and information provision, as well as interventions that are drawn directly from these ideas such as nudging and trying to 'de-bias' decision-making.

3.1 Rationales for intervention

There are two broad types of economic rationale for government intervention:

- **market failures**, when privately-determined outcomes are not optimal from an individual or a social perspective;
- **redistribution**, if society as a whole is better off from a more equal distribution of resources than is delivered through private markets.

Both groups are affected by behavioural insights.[16] We say more about redistribution in Chapter 6 and focus here on market failures.

Perhaps the most common market failure used to justify policy intervention is the **externalities** argument. Some activities generate costs and benefits to third parties that are not reflected in market prices. For instance, factories may create pollution which damages the local environment and the welfare of local residents. Burning petrol generates carbon emissions which have a global environmental cost. These costs, in the standard framework, are not considered by the factory or the motorist, which leads to excess pollution from a social perspective even if private decisions are perfectly optimal. The policy response most often suggested is the Pigouvian tax (Pigou, 1920).[17] Adding a tax to the externality-generating activity 'internalises' its cost into private decision-making and thus leads to socially optimal outcomes if levied at the right rate. An extreme version of the externalities case is that of **public goods**. These are goods where, in essence, almost all of the benefits are external. One person's consumption of a public good does not prevent others from consuming it, and nor is it possible to restrict access to the public good once it has been provided. A classic case is national defence: once the defending force is provided, everyone benefits even if they did not contribute. This creates what is known as a free-rider problem: no individual has any private incentive to pay for the public good, even though they derive some benefit from its provision. Public goods are often therefore provided directly by governments, financed through taxation.

Behavioural economics offers a number of key insights for the externalities argument which could also affect the appropriate policy response. We go into more detail and discuss the evidence base in Chapter 5. Briefly, the standard result assumes that people are self-interested and do not voluntarily take into account the external costs and benefits their behaviours generate. However, this need not be the case. If social preferences motivate behaviour, then people may (wholly or partly) self-internalise, which could generate socially optimal outcomes even without intervention. Indeed, intervention would be actively harmful if externalities are already accounted for in private decision-making.

Behavioural economics also suggests new sources of externalities. In the standard model, externalities emerge only because people's own outcomes are affected by the actions of others. With social preferences, individual welfare can be *directly* affected by the choices other people make. In models where people suffer from temptation costs and have to engage in self-control, the temptations may come from the actions or behaviour of other people. The self-control costs are then in effect externalities – someone on a diet may suffer if they are in a room with people eating unhealthy food, alcoholics may face greater self-control costs at parties, and so on. Models of time inconsistency suggest that someone's actions today could generate costs or benefits for that same person in a future period. This is often referred to as an **internality** – an externality on one's own

[16] See section 3 of Congdon et al. (2011) for further discussion of behavioural rationales for intervention.

[17] Of course, if the activity is associated with external benefits, we may want to consider Pigouvian subsidies.

future self. Under the standard model, the individual would recognise these long-run costs and benefits in making current decisions, but with time inconsistency they may not appreciate how current choices will impact on future utility. An example might be saving: someone could decide to save today but, in the future, be tempted to spend the money if they discount the immediate future heavily or fail to appreciate how their future preferences might change.

A second set of market failures concern **information problems**. Market failures emerge when different market participants have different ('asymmetric') information. In extreme cases, this can lead to markets breaking down altogether ('missing markets'). The classic case is the so-called 'market for lemons' (Akerlof, 1970). Sellers offer used cars to buyers, but the buyers cannot verify the quality of the car (whether or not it is a 'lemon') before buying. As a result, buyers are not willing to pay the high price that would be needed to sell a good-quality used car because of the risk it is, in fact, a lemon. Regulation to ensure buyers can obtain refunds if the car is faulty, along with monitoring of sellers, is therefore necessary.

A similar example concerns private unemployment insurance. In principle, people could take out contracts with insurers that would pay them 'benefits' if they lost their job. However, the likelihood of an individual becoming unemployed depends on their innate 'quality' as an employee. This is something the employee knows, but which the insurer cannot verify. If people more likely to be fired are also more likely to want private insurance, the insurer would not want to insure them. This is the case of **adverse selection**. Unemployment benefits, then, tend to be provided by the state in a form of 'social insurance' paid from taxation. **Credit constraints**, which are often used to justify intervention in financial markets, are also of this form. Some people may be good candidates to borrow money when they have temporarily low income, but lenders cannot easily verify that current financial difficulties are temporary rather than permanent and so they refuse to extend credit.

A related concept is **moral hazard**. People may engage in behaviours that cannot be observed but that make certain undesirable outcomes more likely. Policies designed to counteract adverse selection could increase moral hazard. Providing unemployment benefits can reduce the effort people put into searching for jobs. Providing a national health service because of failures in private health insurance markets might lead people to take risks with their health. Giving easier access to credit might mean people take less care to ensure their finances are secure in the long run.

Ideas from behavioural economics highlight new ways in which information asymmetries might emerge. Models of bounded rationality suggest that it is a question not only of who has what information but also of who is able to process and act on that information. Those who are relatively sophisticated, informed and attentive to new information might be able to exploit those who are relatively unsophisticated, uninformed and inattentive. This might lead to additional reasons to want to regulate certain transactions, particularly if in general it is firms which are relatively sophisticated and consumers who are not. We return to this in Section 3.2.

Behavioural concepts also imply, though, that market failures related to information may be less significant. For example, social preferences might mean people do not engage in more risky behaviour even when insured, moderating concerns about moral hazard. Cases where markets fail because of self-selection based on private information – sick people demanding health insurance, lazy workers demanding unemployment insurance and so on – may also not be that significant if people are unable to act on all the private information at their disposal.

At this stage, there is an important point to make. Behavioural insights offer new rationales for intervention: new forms of information asymmetry, new sources of external costs and benefits, problems of self-control, and so on. However, in general, we need to be careful when making the case that the government should intervene for these reasons, and in particular that markets will not

emerge to deal with these issues themselves without any direct intervention. For example, if people are concerned to limit their ability to spend saved income in the future, they can invest in many commonly-available restricted-access accounts which impose penalties for early withdrawal. It is not clear what the role for government provision of such accounts would be, though of course there may still be a legitimate role in regulating their provision and ensuring that people who might most benefit from taking them up are able to do so.

However, there may well be reasons to think that, in many cases, private markets will not by themselves provide the necessary solutions. For example:

- Consumers may not always be **aware** of their 'biases' and so not demand private mechanisms to help overcome them. In this case, though, governments need to be clear how a particular intervention can help such consumers.
- It may be more profitable for markets to **exploit** consumer biases than to provide mechanisms to ameliorate them, which might then justify regulation of firm behaviour. Barr et al. (2008) note that it is not really possible to make a general statement about firms' incentives to exploit consumer biases; rather, they will depend on the context and the nature of the bias.
- In some cases, actions in one market that help overcome biases can be **unravelled** in another market. The mere presence of a 'market' solution might not in itself suggest there is no need to intervene. For example, in a sophisticated financial services sector, banks may offer restricted-access accounts to help savers overcome time inconsistency problems. But they also offer cheap credit through new credit card offers, and consumers who have restricted their access to liquid assets might be more tempted to take up these offers. Private commitment mechanisms might therefore be undermined by 'spot' markets for tempting products to supply consumers when they are vulnerable to temptation. In this case, governments have an advantage over markets in using instruments such as taxation which raise the price of tempting goods for everyone.

3.2 Types of intervention

As with the case for intervention, behavioural insights are important both for what they say about traditional, existing forms of intervention and because they suggest new ways to intervene. A report by the Nuffield Council on Bioethics (2007), looking at public health interventions, considered different policies in terms of the degree of 'intrusiveness' they imply for decision-making. Roughly in order from most to least intrusive, traditional interventions can be classified into three broad groups in the framework of the standard choice model:

- **Regulation** to restrict freedom of choice in some way, eliminating some options from the available choice set altogether. Regulation can be both on consumer behaviour (such as banning smoking in public places) and on firm behaviour (imposing more stringent minimum standards on the fuel efficiency of newly manufactured cars, for example).
- Altering **incentives** such as using taxes and subsidies to raise or lower the price of some choices, or redistributing income. These work to change the economic constraints that people face in making decisions.
- Providing **information** and **education** to ensure that people are aware of the relevant options and their characteristics to help make better choices.

In addition, behavioural ideas suggest two more types of intervention:

- **Nudging** behaviour by changing the 'choice architecture' in which decisions are made but not fundamentally altering any of the standard economic constraints such as prices, incomes or the set of available choices.
- '**De-biasing**', i.e. trying to design policies to enable consumers to act more 'rationally'. This is not the same as providing mechanisms that might improve welfare for consumers suffering from behavioural 'biases' (such as commitment devices to help avoid temptations), but rather focuses on whether policymakers can actually fundamentally alter these biases.

Chapters 4 to 7 focus on behavioural insights for aspects of taxation in providing financial incentives to behave in particular ways. In the rest of this section, we briefly outline some key insights for these other forms of intervention.

It is worth noting that, in some cases, there are obvious interrelations between policies of different forms. For example, 'nudge' policies often have at least some aspect of information provision and even regulation (usually of firm behaviour) built in. Policies aimed at 'de-biasing' behavioural aspects of choice might well rely on education and training. Often, too, interventions are actually packages of different policies with similar goals. For example, the recent alcohol strategy published by the Home Office (2012) includes proposals for a minimum price for alcohol (which alters economic incentives) alongside stricter regulation of opening hours for licensed premises and providing information on the dangers of excess alcohol consumption. Packaging policies together like this might improve their overall effectiveness, but makes it more challenging to isolate the impact of individual policies on behaviour.

Regulation

Behavioural insights into aspects of consumer decision-making offer a number of suggestions for how regulatory policy could be improved. An excellent summary is given in Sunstein (2011), who identifies four main points and provides references and examples from (in particular) the US policy context:

- Regulation to require firms to **disclose information** to consumers that they may not, in a free market, wish to make public (for example, the calorie content of menu items in restaurants or the fuel economy of vehicles).
- Regulation of the **form in which information is presented**, to enable it to be more easily understood (for example, forcing credit card companies to present information on interest rates in a consistent way). This includes making some aspects of choice more visible and salient (such as pictorial health warnings on cigarette packets rather than textual ones).
- Regulation to **reduce complexity**, such as setting default policies when people find it hard to choose, reducing administrative burdens (for example, the hassle costs of switching bank accounts or utility suppliers) and perhaps even restricting the number of choices if choice overload is a significant problem.
- Regulation to allow consumers to make **social comparisons** of their behaviour with that of others, if social norms guide decision-making (for example, providing average energy-use data on bills). Regulations may also help to *shape* social norms, which might enhance their impact. For example, laws reducing blood alcohol limits for driving could act as social signals that discourage drinking beyond the limits they place on individual behaviour.

Another key survey is given in the report by the Office of Fair Trading (2010), which looks at the evidence for and implications of consumer behavioural biases in terms of competition policy. A common point in both studies is that, in some cases, firms may act to take advantage of behavioural

aspects of consumer choice in ways that raise firm profits and reduce consumer welfare. Congdon et al. (2011, p.65) argue that:

> markets give people what they think they want at the time of choosing – not necessarily what actually makes them best off.… while competition will ensure that markets efficiently deliver the goods and services that people choose, those choices do not necessarily correspond to optimal outcomes.

Some regulatory policy recommendations that emerge from thinking about behavioural issues are not particularly new. European Directives have mandated health warnings on tobacco packets since 1992, presumably under the belief that manufacturers would not voluntarily disclose health information to smokers. However, behavioural insights give ways in which regulation may be more effective (such as how information can be made more useful and meaningful),[18] and also provide stronger theoretical underpinnings for why firm behaviour may sometimes be costly in terms of consumer welfare.

For example, Ellison and Ellison (2009) discuss the idea of **obfuscation**: it may be in firms' private interests to make information-gathering purposely difficult and costly in order to reduce the extent to which boundedly-rational consumers shop around or switch. This allows firms to charge higher prices and retain more custom. Rotemberg (2007) notes that policies to ban 'price gouging' (charging high prices at periods of unusually high demand, such as inflated hotel room rates during an Olympic Games or umbrella prices during a sudden downpour) would be inefficient under the standard model – prices are determined by market forces and if people are willing to pay the increased price then so be it. However, if people are time inconsistent, subject to visceral temptations or averse to perceived losses, they may later suffer costly regret at paying the high price. Similar rationales might justify regulations mandating cooling-off periods or allowing consumers no-quibble refunds for some purchases for a given time period.

Consumer behavioural biases can also allow markets that are actively damaging for consumer welfare to emerge and persist. Spiegler (2006) discusses the notion of '**quacks**' who profess to be able to cure an illness but whose treatment has no true effect at all on recovery. If people were able to acquire and process this information costlessly, then it would be clear there was no benefit to buying the treatment and so the market could not survive. However, boundedly-rational consumers may rely on 'anecdotes' as evidence. More formally, rather than looking at everyone who received treatment or otherwise to evaluate the efficacy of the treatment, consumers pick one person who did and one person who did not and compare their outcomes. Some consumers will, purely by chance, have in their anecdote someone who received treatment and recovered and someone who did not receive treatment and did not, and see this as proof that the treatment works. Thus, bounded rationality sustains a market that, ultimately, has no real value for consumers. If identifiable, such markets need to be regulated.

Some scepticism of whether firms are really able to exploit behavioural biases in ways that might require regulatory response is sounded by Epstein (2006). In many cases, models that assume firms are able to recognise 'biased' and 'rational' consumers and set prices or contracts accordingly may not be relevant, either because firms cannot easily set different prices for different groups or because they simply cannot distinguish who is biased or otherwise. He also cautions that regulation

[18] It is worth noting there is conflicting evidence on the efficacy of interventions designed to make information simpler to process. Using experimental methods, the European Commission (2010) finds that when information on financial investment options is presented in a simple, consistent fashion, people make more optimal investment choices, whereas when unnecessary information is added, people make poorer choices. However, in a field study where some people were given simplified information about the investment performance of different mutual funds and others were given more complex information, Beshears et al. (2009) find that those receiving the simplified information did not achieve better returns on their real-world investment choices.

designed to curb firm exploitation of some biased consumers (for example, banning low introductory 'teaser' rates on credit cards) would detrimentally affect other consumers. Huck et al. (2011) also note that whilst research has established the theoretical possibility that firms can exploit consumer biases based on adaptations of economic models, there is a need for more empirical evidence on the real-world size of the problem.

Armstrong and Huck (2010) note that assuming that firms are pure profit-maximisers, who will choose to exploit biased, naive consumers if profitable to do so, ignores the probability that behavioural factors influence firm choices as well – decision-makers in firms may seek to 'satisfice' in their profit level, or use over-optimistic probabilities in looking at expected outcomes, and so on. Theoretical and empirical evidence on the interaction between 'behavioural' consumers and 'behavioural' firms and on whether this increases or lessens the case for regulation of firms would be useful.

Information provision

Governments regularly engage in policies that seek to educate or inform consumers. Many of the ways in which such policies can be made more effective based on behavioural insights are similar to those regarding regulation: to the extent that framing and salience are important in determining which information consumers pay attention to, policymakers should think not only about what information to provide but also about how it is provided. For example, Dolan et al. (2010) discuss several studies that suggest that the **messenger** – the person or group providing the information – can affect how people respond to it. People may be more trusting of information that is seen to be provided by experts or those without vested interests, or by people who are like the target audience in some way. If people are more likely to notice and act on information provided by appropriate messengers, this could be important for policymakers.

Other ways in which information is framed could affect its impact. Simple, easily understandable messages may be more effective for boundedly-rational consumers. The UK 'five-a-day' campaign for eating fruit and vegetables is one example.[19] Capacci and Mazzocchi (2011) estimate that the campaign increased consumption by around 0.3 portions on average. Prior et al. (2011) find that 85 per cent of people were aware that five daily portions was the recommended intake, with greater awareness amongst higher income and socio-economic groups. Of course, simplicity of the overall message comes at the cost of misunderstanding the detail – for example, people appeared confused as to what did and did not count as a portion. Griffith and O'Connell (2010) also point out that a simple message may not be effective if it is not really appropriate for different groups – there is a trade-off between providing easily understandable messages and providing the more personalised information that may be needed in the presence of substantial consumer heterogeneity. They also note that government information campaigns may affect the incentives of private firms. For example, if the message about eating more fruit and vegetables increases demand or makes consumers less responsive to prices, this would raise the optimal market prices, offsetting some of the policy impact. Government information may also change the amount or type of private advertising.

Behavioural insights may also be important for information as a policy tool if information can play on or even change social preferences. Social norms around issues such as seat-belt use, drink-driving and cigarette smoking have all changed significantly in recent years, although it is not clear what the impact of information has been on shaping these norms compared with additional regulation or tax-based policies.

[19] See http://www.nhs.uk/LiveWell/5ADAY/Pages/5ADAYhome.aspx.

The idea of **social marketing** as a policy tool, in which lessons from private marketing and advertising are applied to the promotion of 'good' behaviour, is gaining some traction. In 2006, the government established the National Social Marketing Centre, offering advice for social marketing in a number of areas and including pilot schemes and some evaluation evidence on the impact of various programmes.[20] Social marketing makes use of more targeted information based on evidence about the barriers to behaviour change (including behavioural biases) that particular target groups face. A specific example looking at retirement saving in a US non-profit institution was discussed in Lusardi et al. (2009), who found that the complexity of opening a retirement plan was a significant barrier. They designed a leaflet breaking down the process into simple steps, which helped people overcome the desire to procrastinate, and providing tailored information about retirement saving. Amongst those who received the leaflet, 41 per cent opened a plan within two months, compared with 28 per cent amongst a control group who did not receive it.

Nudges

The use of 'nudges' as a new policy tool is perhaps the most visible sign of the influence that behavioural economics has had on policymakers in recent years. Thaler and Sunstein (2008, p.6) define a nudge as:

> any aspect of the choice architecture that alters people's behavior in a predictable way without forbidding any options or significantly changing their economic incentives. To count as a mere nudge, the intervention must be easy and cheap to avoid. Nudges are not mandates. Putting the fruit at eye level counts as a nudge. Banning junk food does not.

In the context of the standard choice model, a nudge should not raise prices, or change incomes, or restrict consumer choice. Rather, nudges influence behaviour by altering the environment in which choices are made.

A wide range of different interventions have been characterised as nudges. Perhaps the most influential is the notion of defaulting people into retirement savings plans (we discuss the evidence in Chapter 6). In effect, the policy automatically moves people from one option in the choice set (not to save) to another (having an account), but makes it almost totally costless for someone who was making their optimal choice of not saving in the first place to return to that choice by opting out.

In many cases, though, the boundary between nudges and other types of policy is blurred. For example, many so-called nudges include at least some information provision. Requiring calorie information to be displayed on food menus obviously provides additional information to consumers. The additional 'nudge' might depend on how the information is displayed and made relevant to consumers. Nudges explicitly rule out regulation of consumer behaviour but not regulation of firm behaviour: both whether and how the calorie information is provided might require regulation of firms.[21] Such regulation could also generate indirect effects on the economic constraints facing consumers, perhaps if the additional costs imposed on firms lead to higher prices.

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[20] See http://nsmcentre.org.uk/.

[21] In the UK, calorie labelling is currently voluntary under the Department for Health Public Health Responsibility Deal (http://responsibilitydeal.dh.gov.uk/2012/02/03/f1-factsheet/). One concern over voluntary approaches is that consumers could self-select away from those firms that do comply: those choosing unhealthy food may avoid companies that provide the information. Another concern is that if only the firms providing relatively healthy food comply, the reference point for consumers weighing up different options might be wrong. This means consumers might prefer unhealthy, unlabelled options to relatively healthy labelled options which look bad in comparison with very healthy labelled options.

An advantage of nudges is that they can change the behaviour of those who are 'biased' without imposing particular costs on those who are not. For example, as we will discuss in Chapter 5, the idea that time-inconsistent smokers may plan to give up but find it hard to do so suggests a rationale for anti-smoking policies as a commitment mechanism. These could include a higher optimal rate of cigarette taxes or bans on smoking in public places, both of which raise the cost of smoking now and thus help consumers overcome their present bias. However, both policies impose costs on smokers who do not want to give up. An alternative, nudge-inspired policy might be to arrange some sort of private or public mechanism whereby people can voluntarily commit themselves to giving up (perhaps through signing a contract or other agreement to do so by a certain time) and face a penalty if they fail to do so. Examples of such approaches include the website stickk.com and trials outlined by the Cabinet Office (2010) in conjunction with the private sector. A radical example is given in Giné et al. (2010), who designed a bank account offered in the Philippines in which deposits are lost after six months if the account holder fails a urine test for the presence of nicotine. This appears to have a significant effect in reducing smoking rates. In all cases, people who do not wish to give up are free not to participate.

The idea that some people's behaviour can change without imposing costs on others is sometimes called **libertarian paternalism** (Thaler and Sunstein, 2003). Paternalism is, in general, seen as a controversial reason for government intervention, since it implies that governments know better than individuals that a particular outcome would be welfare-improving. In the standard economic model where consumers are assumed to make rational choices given the constraints they face, people are already welfare-maximising. However, if consumers do not always act in their own self-interest, and are aware of it, they may value policies that enable them to do so. Camerer et al. (2003) and Haisley and Loewenstein (2008) develop a simple way of assessing whether paternalistic policies are worth implementing. Essentially, it involves weighing up the benefits for those who are the target of the policy against the costs for those who are not and any costs of implementing the policy. The libertarian paternalism approach would tend to favour only those policies for which the costs (other than implementation costs) are close to zero, whilst others may view policies that impose some costs for some consumers as desirable if there are demonstrably large benefits for others.

Glaeser (2006) is more sceptical of the view that behavioural economics provides a compelling rationale for paternalistic interventions. In particular, he suggests that such interventions might not be justified if, during their development, policymakers are more easily 'captured' by special interests and lobby groups who would find it hard to influence the choices of individual consumers directly. Loewenstein and O'Donoghue (2006) also suggest that interventions that appear to have no direct cost on those unaffected might, in fact, impose 'psychic' costs on them if they make particular activities appear socially shameful. A voluntary contract system to help people quit smoking or lose weight could send social signals that reduce the welfare of people who – through free, rational choice – want to smoke or eat unhealthily, even though they are not compelled to sign up to the system.

De-biasing

If consumers suffer from behavioural biases that mean their behaviour is not always welfare-maximising, to what extent might policymakers actively intervene in order to help consumers 'de-bias' rather than simply helping consumers respond to their biases as if they were inherent, immutable characteristics? There is evidence that, in fact, behavioural biases are changeable. List (2003 and 2011) finds that the endowment effect (see Section 2.2) disappears when people gain experience of trading in real-world markets. Schwarz et al. (2007) provide evidence from experimental psychology that excess optimism, which might be a feature of subjective decision

weights in prospect theory, diminishes as events get closer (though this could also reflect new information being learned over time).

There is little compelling evidence that information aids de-biasing. Schwarz et al. (2007) find that information campaigns designed to help people overcome systematic biases in understanding may even make understanding worse. For example, they find that campaigns focusing on debunking 'myths' actually led people to believe the myths more, perhaps because the campaign simply lends credibility to them. Epstein (2006) is also sceptical of the value of information campaigns as a tool to de-bias, noting that people who are already acting 'rationally' could become biased if they react to a campaign that is not targeted at them. For example, someone who uses their credit card infrequently and pays off the balance promptly would seem to be making optimal choices to borrow only when necessary to smooth their spending. But a campaign against excessive credit card interest rates might discourage them from even doing that, if they perceive a risk to credit card use that is not particularly relevant to them. This suggests that attempts to 'de-bias' through providing information, perhaps in the belief that boundedly-rational people will not be willing to seek out information on their own, need to be carefully implemented and targeted. An interesting example in the UK is the recent announcement of personalised taxpayer statements – a breakdown of an individual's direct tax payments into different items of government spending. This might help to offset misperceptions about tax rates and patterns of spending in relation to tax rates, but how the statement is designed might well influence how it changes public attitudes.

Even if governments could successfully de-bias, the rationale for them to do so would depend on arguing that the private sector would not. We highlighted several cases why the private sector might not do this at the end of Section 3.1. A further point is that the incentives governments face to engage in de-biasing could be rather weak, if there is little pay-off with the electorate. For example, McCaffery and Slemrod (2004) note that voters may not respond favourably to governments that make taxes more visible. Alt et al. (2010) suggest that tax and spending policy in the UK has been at least partly driven by issues of visibility rather than economic efficiency,[22] which might imply governments reacting to behavioural biases rather than trying to remove them. For example, the authors note that tax increases have been focused more on less transparent taxes such as VAT and National Insurance, and less on highly visible taxes such as income tax.

3.3 Conclusions

Behavioural insights have several implications for traditional market failure arguments for why governments should intervene in private decision-making. In some cases, the arguments are weakened – for example, if consumers voluntarily internalise the external costs they impose on others, or if bounded rationality reduces the likelihood of adverse selection as people fail to act on the information they have at their disposal. On the other hand, new justifications for intervention arise if behavioural factors give rise to new sources of externality or the scope for some consumers to face exploitation. Interventions rationalised by behavioural factors need to be clear that government is the right agent to respond and that markets will not by themselves emerge to deal with these issues. There are reasons to believe that in many cases they will not, either because consumers will not demand a market response if they are unaware of their biases or because market incentives to exploit biases will exceed incentives to offset them. However, clear empirical evidence that such exploitation is significant would be helpful.

[22] Visibility and economic efficiency may not be entirely independent concepts. In particular, the visibility of a tax can affect its efficiency (see Section 4.2 for a more detailed discussion of this).

Behavioural factors should also influence how governments regulate and provide information, highlighting the crucial point (developed further in subsequent chapters) that behavioural economics has resonance for more effective implementation of traditional policies. As well as information on the costs of the exploitation of behavioural biases, our discussion has highlighted other areas where further evidence and research would be useful. These include the possible uses of social marketing as a policy lever and the trade-off between information that is simple to understand and information that is sufficiently targeted and nuanced to generate useful behavioural changes.

Nudges and attempts to de-bias are new policy instruments inspired by behavioural economics. It is hard to clearly define nudges, which often contain aspects of both information and regulation, and some caution needs to be exercised in asserting that they are 'costless' for those who are not nudged. Much less attention has been paid to de-biasing, which is clearly controversial, relying on the view both that policymakers can identify the factors leading consumers to make poor decisions and that they can implement policies that successfully change these factors. Policymakers need to tread very carefully in considering whether to engage in attempts to de-bias, and this is a further relatively under-explored area on which future research could focus.

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4. Raising revenues efficiently

Summary

Financing public spending means governments need to raise tax revenue. It is clearly desirable to minimise the economic costs – to raise the revenue in the most efficient way. The main sources of these costs are the wedges driven between the prices consumers are willing to pay and the prices producers are willing to accept and between the wages firms are willing to pay and the wages workers are willing to accept. These wedges distort consumption patterns or the amount people work. The cost of raising revenue depends to a large extent on how responsive people are to taxation: if people respond a lot, their behaviour is distorted more and relatively little revenue is raised.

For various reasons, different behavioural biases might reduce responsiveness:

- **bounded rationality**: people may have difficulty understanding the tax system;
- **framing**: some forms of taxation may not be particularly salient;
- **time inconsistency**: some tax payments may be seen as far-distant liabilities;
- **social preferences**: people may have an intrinsic willingness to pay tax.

There is considerable evidence that these biases do indeed affect how consumers understand and respond to taxes, though it is not clear whether these are short- or long-run effects and it can often be hard to disentangle the particular mechanism through which responses are affected. Most evidence has focused on salience which has implications for a number of areas – for example, the use of automated payments (such as in congestion charging) may mean people do not notice tax changes.

Some features of the tax system that play on these biases could be open to manipulation by policymakers. For instance, the tax structure could be made more difficult to understand, or less salient, by increasing reliance on taxes deducted at source. This suggests that policymakers may be able to reduce the extent to which consumers respond to taxation, in principle making the system less economically costly. In practice, manipulating biases in this way imposes direct welfare costs on consumers, could introduce other costs of complexity and tax avoidance, and has negative distributional implications. If attempts to play on biases by hiding taxes were uncovered, public support for taxation could be undermined.

A feature of many modern tax systems where these issues are important is the use of in-work tax credits to encourage people back into the labour market. These add complexity to the system, particularly for low-income workers on whom they are targeted, who already face an opaque set of incentives from different taxes on earnings and the withdrawal of means-tested benefits. Therefore people may not respond to such incentives, or at least not so much as would be predicted from the standard model. There is a danger that people may prefer not to take a job rather than engage with a tax system that is perceived to be very complicated. It is not clear to what extent these issues offset the benefits of getting people back into work.

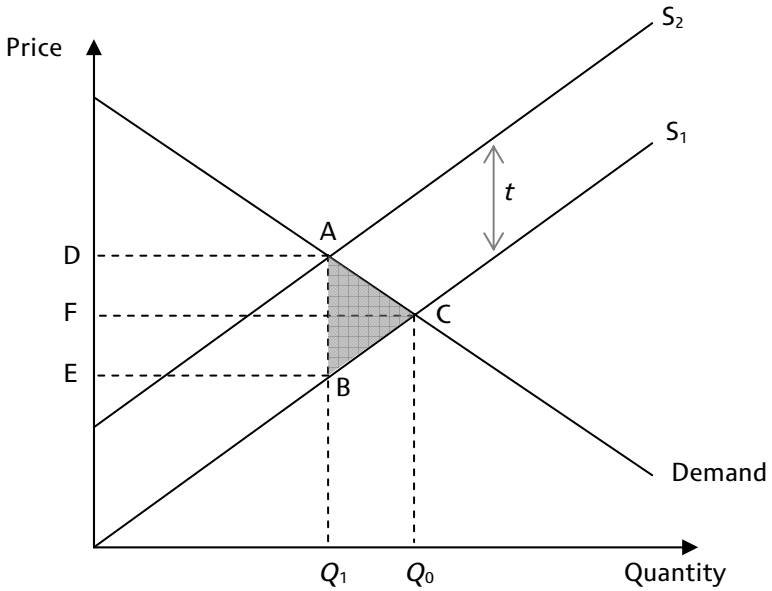
Governments need to levy taxes to finance public spending. Tax revenues in 2011–12 are estimated to have been just over £570 billion, rising to £735 billion in 2016–17 (Office for Budget Responsibility, 2012). Given that the government has to raise some desired level of revenue, the crucial question is how the money can be found in the most efficient, or least costly, way.[23]

[23] The costs of taxation include the costs of administration and of ensuring compliance. We look at compliance issues in Chapter 7.

Fundamentally, taxes distort the behaviour of firms and consumers, which may lead to economic costs. Minimising these distortions is therefore important in thinking about efficient taxation.[24]

Under the standard model, distortions arise because taxes drive a wedge between the prices paid by consumers and the payments received by sellers. This discourages what would otherwise be mutually beneficial transactions. The situation is illustrated in Figure 4.1. Here, a tax at rate *t* is introduced in the market for some good. This shifts the supply curve from S_1 to S_2: a firm previously willing to sell quantity Q_1 at price E now requires a tax-inclusive price D to sell that amount. The tax reduces demand from Q_0 to Q_1 and raises revenue given by the area ABED. The tax reduces consumer surplus (the excess of the amount consumers were willing to pay for the good over the amount actually paid, given by the area under the demand curve above the price they pay) by ACFD. Producer surplus (the excess of how much producers received to supply the good over how much they were willing to accept to supply it, given by the area above the supply curve below the price they receive) falls by CBEF. The loss of surplus is larger than the revenue by an area equal to the shaded triangle ACB. This is known as the 'deadweight loss' or the 'excess burden' and represents the efficiency loss from taxation.[25] A similar analysis can be applied to the labour market: taxes on labour income distort incentives to work, leading people to work less than they otherwise would (or not at all).

Figure 4.1. The distortions created by taxation under the standard model



The standard analysis suggests that taxes are more distorting when consumers are very responsive to prices. To see why, imagine that the government were to place a large tax on green peppers and that, in response, consumers immediately switched to consuming red peppers. Such a tax would raise nothing but would impose real costs on consumers by preventing them from consuming their preferred variety of pepper. When we move away from the standard model, additional considerations come into play, and we discuss these in the rest of this chapter. They affect both how we think about the size and source of distortions created by the tax system and how governments might seek to reduce them.

[24] In general, of course, we may be prepared to sacrifice some efficiency in order to improve equity. We set issues of equity and redistribution aside for the moment; these are discussed in more depth in Chapter 6.

[25] This simple analysis assumes that there are no social costs associated with the taxed good which might lead to overconsumption in the absence of the tax. We analyse issues around corrective taxation in Chapter 5.

4.1 Bounded rationality

Bounded rationality suggests that when faced with difficult, complex choices, people may make suboptimal decisions by resorting to simplified rules of thumb to determine their behaviour. As a result, consumers may respond differently to more and less complicated tax systems. Fochmann et al. (2010) survey laboratory evidence for the impact of tax complexity and conclude that 'the higher tax complexity is the worse is the subjects' judgment and quality of decisions' (p.7). Chetty et al. (2009) show that even if there are small costs of fully processing taxes, it may sometimes be rational for consumers to ignore or approximate them if the welfare consequences from doing so are not very large.

One aspect of complexity that may be particularly important is using tax incentives to encourage people to work. Many countries, including the UK, have used tax credits as a way to boost in-work earnings. As these are withdrawn when incomes rise, they act in effect like income taxes: each extra pound earned reduces entitlement to tax credits. However, the interaction between the withdrawal of tax credits (and other means-tested support), income taxes and other taxes on earnings such as National Insurance contributions can create a complex set of incentives to work or increase earnings.[26] Romich and Weisner (2000) suggest that households receiving the Earned Income Tax Credit (EITC) in the US are often not aware of its structure. Chetty and Saez (2009) provide evidence from a field experiment that consumers often make poor decisions as a result of a failure to understand the incentives provided by the EITC, and that providing even a small amount of additional information about the system to workers can have relatively large effects on labour supply.

More generally, if the structure of marginal income tax rates is complicated, people might misperceive how changes in their labour supply would affect their take-home income. In principle, it is the *marginal* tax rate which should determine behaviour: how much extra tax is paid from an extra hour of labour supply? However, there is considerable evidence that workers respond more to their *average* tax rate, a phenomenon sometimes referred to as **ironing** (different marginal tax rates are 'ironed' into a single average rate as a basis for decision-making). People may be conscious of their average income tax rate (if they know roughly what tax they pay and what their gross income is from their payslips), but may not know what their marginal rate is. If tax schedules are progressive (marginal tax rates increase with income), then the average tax rate will be less than the marginal tax rate. People responding to the average rate should therefore supply more labour than those responding to the marginal rate.[27]

Liebman and Zeckhauser (2004) construct a model that allows some proportion of taxpayers to be 'schmedulers', who are susceptible to ironing. They examine how the response of schmedulers would differ from that of rational taxpayers following the introduction of the Child Tax Credit in the US in 1998, which sharply reduced marginal rates for some taxpayers but had a smaller effect on the average tax rate. They estimate that a small majority of taxpayers behaved in ways consistent with schmeduling. Feldman and Katuscak (2006) provide further evidence based on the fact that parental eligibility for Child Tax Credit ends when the child hits age 17 in the US. This should be entirely predictable for recipient households since the eligibility rules are, in principle, known. For households in particular income ranges, the end of eligibility increases the average tax rate but not the marginal tax rate. If anything, this should lead to an increase in labour supply brought about by

[26] Chapter 6 discusses behavioural insights in relation to the introduction of Universal Credit.

[27] Assuming that, in response to higher marginal tax rates, the 'substitution effect' (which reduces labour supply since the higher tax reduces the return to working) outweighs the 'income effect' (which increases labour supply as workers have to work more to achieve the same income).

a pure income effect. In fact, the study finds that labour supply falls as if marginal tax rates had increased.

De Bartolome (1995) provides more direct evidence for a confusion of average and marginal tax rates in a laboratory study. Subjects were asked to choose between two investment projects. Returns from one project were subject to a progressive tax. In a control group, subjects were given a lookup table that gave, for each income, the amount of tax that would be paid – that is, the tax was presented in effect as an average tax. In a treatment group, subjects were asked to calculate their liability directly based on the marginal rate structure. The experimental structure meant that subjects who chose between investments on the basis of the average tax rate were worse off than those who chose on the basis of the marginal tax rate. In the control group, 30 per cent of subjects chose optimally based on marginal tax rates, whereas 74 per cent did in the treatment group.

If complexity means that people fail to respond optimally to tax incentives, there may appear to be an economic efficiency case for complexity, perhaps introducing more marginal rates or opaque systems of tax deductions. However, there are several reasons for caution. First, adding complexity generates additional administration costs and could increase the scope for tax avoidance. Second, a complex tax system for earnings could dissuade people from working at all if the costs of dealing with it are seen as burdensome. Third, if there is heterogeneity in the extent to which consumers are boundedly rational, there would be distributional consequences to complexity. Finally, 'mistakes' induced by people not responding to tax incentives properly are not costless. People spending more time in work, or consuming different bundles of goods, than they would if they were properly able to process the incentives they face must themselves be worse off, which may outweigh the benefits of tax efficiency.

4.2 Framing

Consumer responsiveness to taxation may also depend on whether taxes are framed in a way that makes them less **salient**. Consumers respond to their perception of taxation, which depends in part on how visible different taxes are.

For example, consider a consumer buying heating (domestic gas) and food. A new tax on gas is introduced but is not salient to the consumer – perhaps they do not see the gas bill, or the tax and the pre-tax price are separately itemised on the bill and only the pre-tax price is clearly presented. As a result, the consumer does not reduce their demand for gas following the price rise – they behave according to the perceived, unchanged price rather than the true, increased price. However, they now have less money to spend on food – the non-salient tax has generated an additional *distortionary income effect*, which itself creates a welfare cost by causing the consumer to misallocate their budget.[28] This would need to be weighed up against any gain.

There are a variety of features that potentially affect the salience of taxes:

- It could be affected by the **size** of the tax and the **frequency** with which it is collected. It seems plausible that, all else equal, small taxes collected infrequently would be less salient than larger, frequently-collected taxes.[29]

[28] A formal treatment can be found in Chetty et al. (2009). They also note that the salience of taxes may in turn affect their incidence: if consumers under-react to tax changes, firms will be able to pass through a greater proportion of any increase to consumers.

[29] Of course, small taxes can be highly visible and have large impacts on demand, as the experience of the Irish plastic bag tax (see Section 5.4) shows.

- The extent to which the tax is paid **automatically** or whether consumers have to actively remit the tax themselves could affect its salience. Income taxes may be less salient when they are collected directly from pay (such as the PAYE system) than when people have to calculate their own liabilities through self-assessment. Finkelstein (2009) finds that drivers are less responsive to road tolls collected electronically than to tolls collected manually. There may be scope for similar studies of auto-payment of congestion charging or auto 'top-up' of the Oyster card system in London.
- The salience of taxes could be affected by the **complexity** of the tax system. Often it is difficult to distinguish whether complexity makes taxes less salient from whether it makes consumers less responsive owing to bounded rationality. For example, in contrast to the standard model, some studies (Saez, 2010) have found that reported incomes do not cluster at 'kink points' in the income tax schedule – that is, points at which the marginal tax rate increases. This could just reflect difficulties in adjusting hours or income sufficiently to respond to the incentives, but might also be explained by behavioural factors such as kink points being non-salient or the 'ironing' phenomenon between average and marginal tax rates discussed above.
- Whether taxes are included in **published prices** or not could have an effect on their salience. Sales taxes in the US are often only added at the till and not shown on price labels in stores. In the UK, by contrast, VAT-inclusive prices are usually shown on labels (though not always as prominently as the tax-exclusive price if both are shown). Chetty et al. (2009) use a field experiment in stores to show the importance of how prices are published. They compare changes in sales for 'treatment' products, which have tax-inclusive prices added to the label, and for 'control' products, which do not. They further compare these changes with what happens to the same products in stores where no products are given new labels, stripping out general trends over time that might affect the sale of each type of good. Their results are illustrated in Figure 4.2. Adding the tax to the label significantly reduces the demand for the treatment products in treatment stores: the overall effect is a reduction of 2.2 units per week relative to a baseline sale of 25.2 units for the treated products.

Figure 4.2. Effect on demand of posting tax-inclusive prices

Note: Error bars are 95 per cent confidence intervals.
Source: Chetty et al., 2009.

- The **labelling** of tax incentives could affect salience. Saez (2009) conducts a field experiment in which individuals were randomly either offered a '50 per cent match' on top of contributions they made to a retirement account or offered a '33 per cent rebate'. These two incentives are equivalent: someone could contribute £100 to get a £50 match (spending £100 to get a contribution of £150) or contribute £150 to get a £50 rebate for the same outcome. However, 10.2 per cent of those offered the match took it up compared with 6.4 per cent of those offered the rebate. The 50 per cent offer may have been more salient (relating to the 'size of the incentive' point above) or seen as a more up-front incentive which involved less risk on the part of the taxpayer, who had to put up a smaller contribution to begin with. Differential responses to matches and rebates may be related to time inconsistency as well if there is a delay in claiming a rebate.

One interesting application of salience is so-called 'fiscal drag', which occurs when thresholds for paying income taxes rise more slowly than earnings. If fiscal drag is less salient than, say, an announced rise in tax rates, people may not respond to it. Mirrlees et al. (2011) suggest that fiscal drag was 'largely responsible' for an increase in the number of income tax payers from fewer than 26 million in 1996–97 to more than 32 million in 2007–08 as well as for a doubling of the number paying the higher rate of tax over that period.[30] Despite this, we know of no study looking in detail at the effects of consumer responses to fiscal drag relative to other tax changes.

As with tax complexity, an important consideration for policymakers is the extent to which the salience of taxes is something that it is possible to manipulate in order to generate (or mitigate) behavioural responses. Even if it were possible to demonstrate that it would be efficient to make a particular tax less salient (which would require showing that any gain in efficiency from a smaller response was not offset by the costs of a distortionary income effect), the process of passing legislation to do so could in itself draw attention to the tax: that is, the salience of the tax is probably not totally independent of the policy process. Further, if taxpayers are later made aware that some taxes have been deliberately made non-salient, public support for taxation in general could be undermined. Whether changes in salience have only short-run effects on responsiveness is an area that is not well studied in the literature.

4.3 Prospect theory

Under prospect theory, consumer behaviour is partly determined by a reference point. Reference points may be affected by aspects of tax policy – for example, deducting taxes at source may mean post-tax income is the reference point against which tax changes are judged, whilst paying taxes retrospectively may mean pre-tax incomes are the reference point. An income tax cut would represent a gain when judged against post-tax income or would reduce the loss judged against pre-tax income. If losses loom larger than gains, such a cut could have a larger impact on those who pay retrospectively. Again, though, it might be hard to disentangle this effect from the possibility that taxes are more salient for those who pay retrospectively.

A second feature of prospect theory is that of diminished sensitivity to ever-increasing gains and losses. For tax policy, this means that two small tax cuts would be valued more than one large cut, as the second cut would be compared with the new reference point following the first. Similarly, two small tax increases would be more painfully felt than a single equivalent increase. Krishna and Slemrod (2003) note that this implies that taxpayers will value many small deductions from their

[30] In April 1996, the tax-free personal allowance was £3,765 per year and the 40 per cent tax rate became payable on earnings above £29,265 (see http://www.ifs.org.uk/ff/income.xls). Had these thresholds been uprated in line with average earnings, we estimate they would have been £5,912 and £45,953 respectively in April 2007. These compare with actual figures of £5,225 and £39,825.

tax bill over a few large ones. However, small deductions may be less salient, or add complexity, which could offset this.

From this perspective, policies such as excise duty escalators, which lead to regular small increases in taxes over a number of years, might have larger welfare costs than a single large tax increase, which leads to a single adjustment of reference points. Of course, there may be good reasons to want an escalator policy: for example, to allow people to adjust gradually in the expectation of future price rises rather than perhaps having to face more costly adjustments to a large one-off shock.

4.4 Time inconsistency

Time-inconsistent consumers would heavily discount tax liabilities that are due in the future relative to up-front liabilities. This may make them less responsive to pre-announced tax changes. It could also lead to different responses to taxes on income – which are (for most workers) paid up front when income is earned – and to taxes on consumption, which are paid later when the money is spent. Standard theory suggests, for example, that a 50 per cent flat tax on all income should be exactly equivalent to a 100 per cent tax on all consumption. Both reduce real purchasing power by half. With time-inconsistent preferences, responses to the consumption tax may be reduced, perhaps suggesting that shifting the tax burden towards indirect taxation could increase labour supply.

Blumkin et al. (2010) use experimental methods to demonstrate this effect. Subjects were allowed to 'work' by answering questions. This generated an 'income' of points, which could be used to buy food after the experiment. Subjects could also stop answering questions and instead receive soft drink tokens. This set-up allowed subjects to trade off 'work' and 'leisure' time. In various treatments, subjects faced either an income tax of 50 per cent, which halved the value of the points, or a consumption tax of 100 per cent, which doubled the prices of food. Subjects who moved from the no-tax case to the income tax regime reduced their labour supply by a third, while those who moved from the no-tax treatment to the consumption tax regime reduced their labour supply by only 15 per cent. Whilst this result is consistent with the time inconsistency explanation, it might also be driven by salience or bounded rationality – perhaps consumption taxes are less visible or easily understood than direct taxes on income.

4.5 Social preferences

The impact of social preferences on the response to taxes could manifest in a number of ways. For example, the formal incidence of taxes – the party legally responsible for paying them – might drive **social norms** about 'who pays tax', which in turn influence the behavioural response to taxation. Consumers may not respond as much to taxes formally levied on firms and producers, even though the economic incidence of the tax ultimately falls on them in the form of higher prices, reduced wages and so on.

Social preferences could also influence the **willingness to pay** taxes, which in turn helps determine responsiveness to them. For example, if people are more willing to pay tax if they believe the revenues are being used on something they support, there could be a rationale for the hypothecation of tax receipts for particular purposes. Research has shown that public support for taxation increases when governments pledge to earmark revenues to certain areas of spending. Jaensirisak et al. (2005) survey the literature on public acceptance of road pricing schemes and find that support was significantly higher for schemes with hypothecation than for those without it. The

distortionary effect of taxes could therefore be reduced by hypothecation. However, in general, governments should be cautious of hypothecation (Advani et al., 2011) – tying particular expenditures to particular receipts would probably lead to less efficient patterns of spending, since in principle there is no reason that the most effective ways of raising revenues and of spending them should be linked. Further, in many cases, so-called hypothecation is meaningless as it is often impossible to verify that the revenues were spent in a particular way. Public support could also erode if it was felt hypothecation was being used merely as a presentational device.

4.6 Conclusions

This chapter has explored the implications from behavioural economics for thinking about the efficiency costs of taxation. In the standard model, the distortion created by a tax is measured by the number of potentially mutually beneficial transactions that it prevents, which in turn depends on how responsive firms and consumers are to the tax. Behavioural insights suggest that responsiveness depends on factors such as how taxes are presented, tax simplicity, the timing of tax payments, the formal incidence of taxation and whether people have intrinsic willingness to pay taxes. These may interact in different ways to determine how people respond, and it can be hard to disentangle the precise mechanism driving observed behaviour. Taxes that are complex may lead to boundedly-rational consumers making mistakes (such as using average rather than marginal rates to decide what to do), but more complex systems could be less salient. It may require careful experimental evidence to uncover the mechanisms more clearly, but in general if behavioural biases reduce consumer responsiveness to taxation, then the efficiency costs of taxes could be lower than implied by the standard economic model.

Does this mean policymakers should manipulate aspects of tax policy to play on this? It is important to recall that this would have costs as well in terms of consumer welfare. Further, it is not clear that these effects on responsiveness will persist in the long term. Indeed, they could backfire if a perception is formed that taxes are being levied in ways that are not particularly transparent or straightforward as a deliberate policy choice.

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5. Corrective taxation

Summary

Using financial instruments to help people make the 'right' choices includes arguments based on externalities as well as the promotion of so-called merit goods. Behavioural economics may give a stronger rationale for the latter, particularly in cases where time-inconsistent people fail to consume some goods with long-term benefits but high up-front costs. Particularly in the case of young people, there may also be concern that consumption choices of risky goods such as tobacco are sometimes made using over-optimistic assumptions about the future likelihood they will quit. Tax-based incentives may help here, but the case is clearer for more targeted interventions focused on young people, such as information campaigns or tighter minimum ages of participation for smoking, drinking and so on.

A clearer case for taxation is where current consumption, particularly of addictive goods such as tobacco or of 'sin goods' more widely, generates an internality. If people cannot follow through on their plans to reduce consumption of such goods, taxation acts as a commitment device. Estimates from the US suggest that the internality-correcting optimal cigarette tax may be even higher than that justified by externalities alone. However, models of time inconsistency which do not rely on hyperbolic discounting (such as cue-based consumption or temptation) would not favour taxation as an appropriate instrument. More UK-specific evidence on these issues would be useful.

Time inconsistency also suggests that up-front taxation may be more effective than ongoing use-based taxes in changing behaviour. This might rationalise, say, a tax on car purchases rather than an annual ownership charge such as the current vehicle excise duty. The academic evidence on whether people equate up-front and ongoing running costs in making decisions about durable goods purchases is rather mixed, though.

There is some evidence that how taxes are framed can impact on their effectiveness as corrective taxes. For example, consumers in the US appear to reduce the demand for vehicle fuel more when fuel taxes rise than when pre-tax prices rise. This might mean the optimal rate of fuel duty is lower than implied by elasticity estimates derived mostly from pre-tax price changes. There is also some, though limited, evidence that the label of taxation itself can affect how people respond.

Insights from prospect theory suggest that loss-averse consumers would respond more to a tax than to an equivalent subsidy. If financial incentives affect consumer reference points, this could also affect outcomes. For example, under carbon trading, firms or individuals who own carbon permits may value them differently from those who have to buy them, creating an endowment effect which could mean that the initial distribution of permits partly dictates who ends up holding them, in contrast to standard theory. Such issues should be considered if ever the idea of personal carbon trading is revived. Another issue is whether consumers adapt to taxes, incorporating them into their reference point and reducing their response to them unless the rate is changed again. Few of these issues have been studied in depth.

With social preferences, consumers may be willing at least in part to self-internalise the external costs they impose on others. This might reduce the optimal corrective tax rate, but economic theory shows that this depends precisely on how social preferences manifest themselves in consumer decision-making. In addition, if consumers 'behave well' at least partly because of intrinsic motivations, providing financial incentives may lead to crowding out, reducing (or even reversing) the predicted impact of the incentive. This is related to the idea of taxes as a legitimising device, though it is equally possible that the tax label creates social signals that certain behaviours are undesirable. Whilst interesting to study more, there is no obvious evidence that corrective taxes have led to perverse results (such as higher energy taxes increasing energy use) as a result of crowding out or legitimising responses.

An important aspect of tax policy is to try to correct market failures. We interpret this relatively broadly to encompass externality-correcting taxes and subsidies (see Section 3.1) where there is a clear economic rationale to intervene, as well as taxes and subsidies aimed at promoting 'good' behaviour (eating healthy food, attending museums and so on – so-called merit goods) even if there is no clear externality. Behavioural insights may give a stronger rationale for incentivising the consumption of merit goods, if they are goods for which benefits accrue in the long run (health outcomes, improvements in knowledge and human capital) and time-inconsistent consumers do not make optimal private consumption choices of such goods.

Receipts from 'corrective taxes' are a significant share of total revenue. Using the most recent Office for Budget Responsibility (2012) figures, we estimate receipts in 2012–13 of some £63.6 billion from taxes that could broadly be labelled 'corrective'. This represents 10.8 per cent of total forecast revenues that year, and includes excise taxes on smoking, drinking, gambling and vehicle fuel, vehicle excise duty, air passenger duty, and other environmental taxes.

Detailed estimates of how much is spent directly on 'corrective' subsidies are difficult to obtain, but some information can be taken from HMRC estimates of the cost of various tax exemptions and reliefs that might broadly be seen in this way.[31] For example, the cost of zero-rating VAT for books is estimated at £1.7 billion and for prescription drugs at £2.3 billion in 2011–12. VAT exemptions for education cost £2.4 billion, for health £1.6 billion and for postal services £0.2 billion. Tax credits for research and development cost around £0.9 billion. Much smaller measures include reduced rates of VAT for sanitary products, energy-saving products, children's car seats, smoking cessation products, cycle helmets, and contraceptives, which collectively cost some £125 million, whilst the cost of exempting museum and gallery admission charges from VAT is some £35 million.[32]

Before discussing what behavioural insights suggest for corrective taxation, we set out the standard 'externalities' argument. Not all of the insights are centred on the externalities case, as the following sections illustrate. However, outlining the usual argument and implications for taxation now should make some of the later discussion of lessons from behavioural economics for externality-correcting taxes clearer.

The classic externalities argument for corrective taxation is illustrated in Figure 5.1 with a simple diagram representing the market for a good that generates pollution. The total quantity of the good is given on the horizontal axis, with prices and costs given on the vertical axis. The market outcome is where the demand curve (the marginal private benefit from consumption) meets the supply curve (the marginal private cost of production), giving a consumption level Q_0 and a market price P_0.

The costs of pollution are not taken into account by the producers. Suppose that each unit of the good produced generates an additional pollution cost of c. This is the marginal external cost. The marginal cost to society from producing the good is given by the private production costs *plus* this externality. This gives a social cost curve that is shifted upwards by an amount c relative to the private cost curve.[33] From a social perspective, the optimal consumption level is where the marginal *social* cost meets the demand curve, at Q_1. Consuming at the privately optimal outcome leads to a total cost to social welfare of the shaded area. A corrective tax of c levied on each unit produced would align the private and social costs and generate the socially optimal outcome. The

[31] See http://www.hmrc.gov.uk/stats/tax_expenditures/table1-5.pdf.

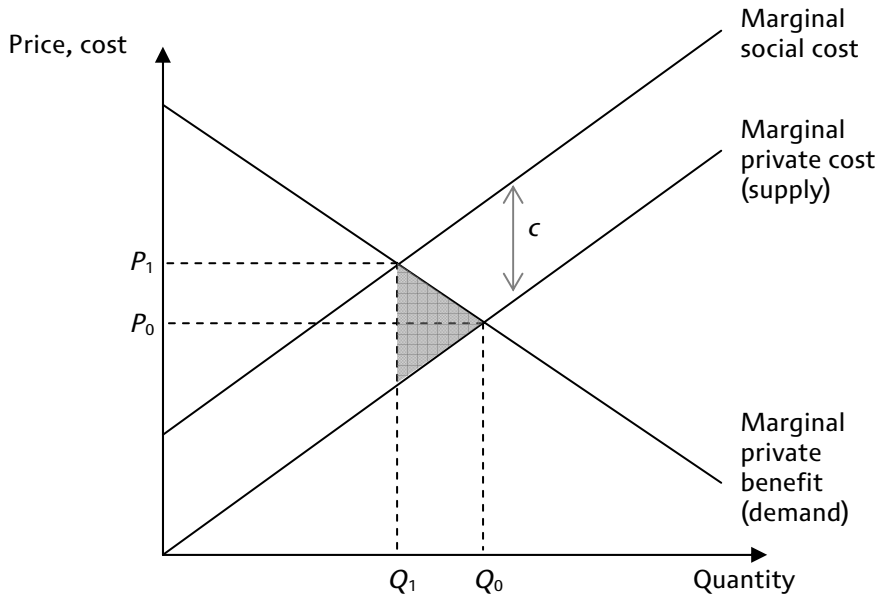
[32] See http://www.hmrc.gov.uk/stats/tax_expenditures/table-b1.pdf.

[33] Of course, we could allow the marginal external cost to be increasing or decreasing with the amount of the good consumed.

consumer price of the good would increase to P_1. A similar analysis can be used in the case where there are external *benefits* to assess optimal subsidies.

The main insight from this simple model is that externality-correcting taxes should be set according to the size of the marginal external cost at the socially optimal consumption level. Insights from behavioural economics may affect the size of the marginal externality and what we think the appropriate instrument to help internalise it would be. This includes the appropriate taxation response.

Figure 5.1. A negative external cost associated with production



5.1 Bounded rationality and time inconsistency

Risky behaviour of young people

Some of the key behavioural insights for corrective taxes concern whether people are making privately optimal decisions about their consumption. If not, then, as described in Chapter 3, corrective taxation may be justified not only by the costs that private consumption imposes on other people, but also as a way to help people make optimal consumption choices for themselves.

A failure to make optimal choices could emerge for several reasons. If consumers are boundedly rational, then they may be doing the best they can according to the information they have and the particular non-standard choice heuristic they have adopted, but other choices would be welfare-improving. O'Donoghue and Rabin (2001), for example, document evidence that the decisions made by young people to engage in certain behaviours may be based on poor information about the risks of activities such as smoking and unprotected sex. They may start to smoke in the belief that, as adults, they will be able to give up easily, and then find they cannot do so later on and come to regret the decision to start smoking. Gruber and Zinman (2001) cite evidence from the US that high-school students were over-optimistic about their likelihood of quitting smoking in five years' time. They estimate that the price of cigarettes has a substantial effect on the propensity of older high-school students to smoke, which would translate into adult smoking behaviour as well. A similar result is found by Carpenter and Cook (2008). Cook and Moore (2001) find evidence using US data on drinking behaviour that higher state-level beer excise taxes reduce the likelihood of young people having drunk alcohol in the last month and weaker evidence that they reduce the

likelihood of them having binged on alcohol. The study does not, though, find any impact on later adult behaviours. Taxes on smoking and drinking could therefore help prevent young people from starting to engage in behaviours they would later regret, though there is little UK evidence on this.

However, it is not clear that taxation is the best instrument if the intention is to reduce smoking or other risky behaviour amongst young people. This is because taxes are not targeted on the young in particular but will also affect the consumption choices of adults, who (perhaps) we might believe are making more informed choices to engage in such behaviours. Measures such as targeted information campaigns and regulations to prevent young people buying tobacco and alcohol are certainly therefore important parts of any overall package of policies as well. For example, Cook and Moore (2001) find that a higher minimum drinking age faced as a young person reduced adult bingeing. In 2007, the legal age for buying cigarettes in the UK rose from 16 to 18. Figures in Fuller (2011) suggest that the proportion of young people aged 11–15 in England who have ever smoked fell from 39 per cent in 2006 to 32 per cent in 2008, though how much of this was driven by the minimum-age change is unclear.

Internalities

The discussion above focused on the case where people, particularly young people, were not able to make optimal plans over their future behaviour because of limited information (in the smoking case, because of excessive optimism about the ease with which they would be able to quit). By contrast, time-inconsistent consumers might well be able to *make* optimal plans but then be unable to carry them out. Again, much of the literature has been focused on smoking behaviour, though the ideas resonate for the consumption of any 'addictive' good.

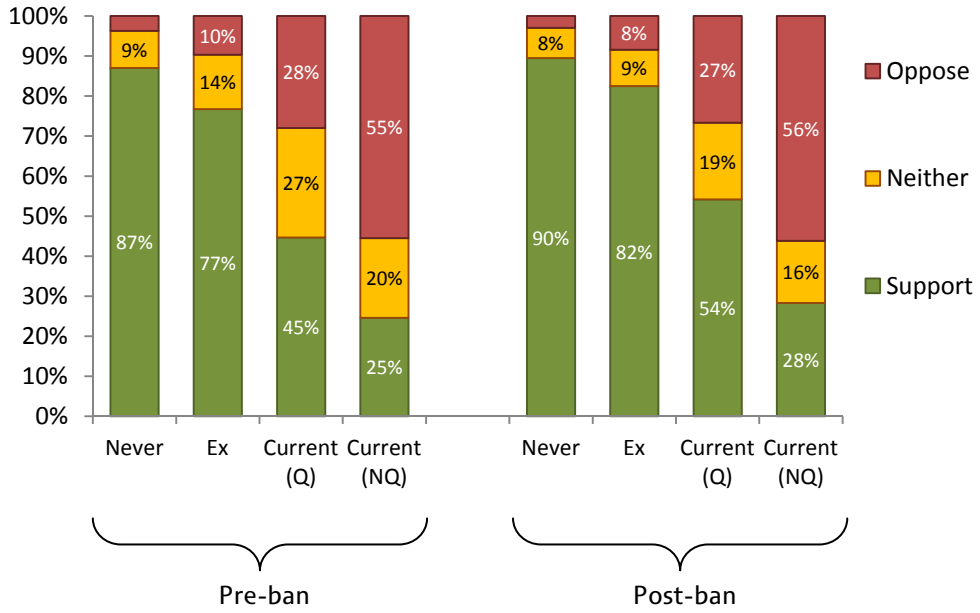
Economic models of how people consume addictive goods are an example of how the standard choice model outlined in Chapter 2 has been adapted. The seminal work was Becker and Murphy (1988), who assume that smoking a cigarette today gives current pleasure but builds up an 'addiction stock', which reduces future utility (smoking now gives immediate benefits but long-term costs). Importantly, the larger the addiction stock (loosely, the more addicted the person is), the greater the marginal benefit of smoking becomes, which captures the idea of needing an ever-greater 'hit' the more addicted someone is. However, this model does not in itself give any rationale (at least beyond the externalities associated with smoking) to tax cigarettes – if we assume that people understand all this and still choose to smoke (**rational addiction**), then it is because the lifetime benefits from smoking are greater than the costs to the individual. If, by contrast, people are time inconsistent, then the plans they make today about how much to smoke now and in the future may not hold when the future comes. By building up the addiction stock, the smoker is more likely to smoke in the future than planned. Smoking today can then be seen as creating an **internality** for the future smoker. Taxation that raises the price of smoking now can therefore make the smoker better off, as the higher price acts as a mechanism helping the smoker commit to giving up or smoking less.[34] There is another version of this idea in O'Donoghue and Rabin (2006), who look at the consumption of a non-addictive sin good that has current utility benefits and future utility costs. Again, they show that in a theoretical model where people are time inconsistent, this formulation generates an internality-based rationale for taxation.

Evidence that smokers value anti-smoking policies is found by Gruber and Mullainathan (2005), who examine how changes in state-level cigarette taxes in the US affect the self-reported happiness

[34] The Office for National Statistics (2012) estimates, based on the 2010 General Lifestyle Survey, that 64 per cent of smokers would like to quit. Tobacco taxes may be less effective at correcting internalities if individual smokers are able to adjust their behaviour to avoid them – for instance, by smoking individual cigarettes more intensively despite this having adverse health consequences (Adda and Cornaglia, 2006).

of people who, based on their characteristics, are likely to be smokers versus those who are not.[35] If smokers make rational decisions, then higher taxes should only reduce their well-being. However, the authors find that higher taxes reduce the likelihood that smokers report being unhappy. More evidence comes from analysing data from the 2007 Health Survey for England, which looked at support for a ban on smoking in pubs amongst people who had never smoked, ex-smokers, current smokers who wanted to quit and smokers who did not. Some of the respondents were interviewed before the ban (which started on 1 July 2007) and some after. Figure 5.2 shows opinions amongst the four groups before and after. Not surprisingly, non-smokers were more supportive, but it is notable that smokers who wanted to quit were much more likely to support the ban and also saw the largest rise in support after it was implemented.

Figure 5.2. Support for a ban on smoking in pubs, by smoker status, 2007



Notes: Current (Q) are smokers who want to quit. Current (NQ) are smokers who do not wish to quit.
Source: Authors' calculations based on 2007 Health Survey for England data.

Precisely assessing the implications of internalities for smoking taxes is difficult, though so too is calculating the marginal external costs of different behaviours to determine optimal corrective taxes in general. By their very nature, internalities depend on the size of the individual's self-control problems and hence their desire for commitment. This will be hard to measure and almost certainly vary across different types of consumer. Some attempts have been made, based on models of time inconsistency (see Section 2.3). Gruber and Kőszegi (2001) estimate an optimal internality-correcting tax per pack of cigarettes in the US for time-inconsistent but sophisticated smokers who are aware of their inconsistency and so value the tax as a commitment device.[36] Under various assumptions, they suggest that the internality justifies a tax of at least $1 per pack, between 60 and

[35] They use a model of likely smokers rather than actual smoker status. Whether someone actually smokes will depend in part on the tax rate, which would bias estimates of the effect of taxation on smoker happiness.

[36] For consumers who are not aware of their inconsistency, the optimal tax rate may be even larger. Sophisticated smokers try to influence their future behaviour by smoking less today and so (in the context of the addiction model) building up less addiction stock, which makes future smoking less attractive. Unsophisticated smokers, who fail to realise that their plans will unravel, do not even do this, such that even higher taxes might be necessary to reduce their smoking behaviour. Gruber and Koszegi (2001) suggest that the optimal tax rate for unsophisticated time-inconsistent smokers might be very high indeed. Since it is not possible to charge sophisticated smokers a different tax rate from unsophisticated smokers, they argue that more direct regulation to ban smoking might be necessary, and this would be particularly useful if it could be aimed more at the latter group.

300 per cent of the external costs per pack and higher than the average excise tax in the US at the time, of around 65 cents per pack. A similar exercise has not been carried out for the UK, where smoking taxes are already much higher (an excise tax of £3.35 per pack of 20 cigarettes).

These results are derived from a hyperbolic discounting model of time inconsistency. However, as described in Chapter 2, other models have been put forward to explain why plans may unravel over time and it is not clear that they would give similar conclusions justifying additional taxes on addictive or sin goods. For example, in the Bernheim and Rangel (2004) model, consumers 'binge' on goods in response to certain cues. If their consumption in these periods is largely unresponsive to prices, then taxes would be totally ineffective as a response to time inconsistency and would simply reduce welfare by increasing the cost of the binge. In the Gul and Pesendorfer (2001 and 2007) model of temptation and self-control (see Section 2.1), welfare depends on what is consumed and the cost of not consuming the most tempting option in the choice set. Assuming that prices do not affect the set of goods available, this again means that tax-based approaches will simply reduce welfare by making consumption more expensive. This suggests some caution in simply interpreting the presence of time-inconsistent behaviour as a rationale for increased levels of corrective taxation, and that we need to be careful to understand the *source* of the time inconsistency as well.

Timing of corrective taxes

Time inconsistency might also affect the way consumers respond to certain corrective taxes. In particular, simply changing the timing of corrective taxes can affect the ways that consumers respond. Under the standard model, demand should respond in the same way to a stream of tax payments (say, an annual charge) as to a single, up-front tax of the same discounted value. This need not be the case for a time-inconsistent consumer.

This has important implications in thinking about using tax policy to encourage consumers to buy goods with higher up-front costs but lower running costs. An obvious example relates to efficiency. More energy-efficient appliances will cost less to use but will be more expensive to buy, and governments seeking to reduce energy use might want to encourage people to buy the more efficient product either through taxing inefficient goods up front when they are bought or through taxing energy costs. Either approach in principle can raise the likelihood of buying the more efficient product. A similar argument holds for cars: more fuel-efficient vehicles cost less to run since they use less fuel for a given distance travelled, but they are more expensive to buy. At the moment, the government imposes an excise tax on vehicle fuel and also charges different annual rates of vehicle excise duty (VED) according to how fuel efficient the car is. Both add to the ongoing running costs of less efficient cars relative to more efficient cars but do not provide up-front incentives.

In the standard model, drivers considering which car to buy will weigh up the purchase price and the running costs of the vehicle in making their choice, taking into account the taxes they will pay over the life of owning the car. In this world, using taxes on running costs would in fact probably be preferable to imposing an up-front purchase tax, since it not only incentivises the purchase of more efficient vehicles but also provides ongoing incentives to reduce fuel use later; by contrast a one-time purchase tax would have no ongoing incentives once it was paid. However, if consumers are time inconsistent, they may heavily discount the future running costs against the immediate up-front price (indeed, the up-front price may also be more visible and salient, and so unduly influence purchase decisions, whereas running costs are more hidden). Time inconsistency potentially justifies the use of more front-loaded taxes. An example in the UK is the introduction in 2010 of the high first-year rate of VED (the 'showroom tax') for more polluting cars. In 2012–13, a car generating more than 255 grams of carbon dioxide per kilometre driven will be charged VED of £1,030 in the first year and £475 in subsequent years, compared with no 'showroom tax' and an

annual charge of £100 for a car producing 121–130g/km. Johnson et al. (2012) demonstrate how the first-year rate has led to much sharper incentives to buy less polluting cars.

However, the academic literature on whether consumers really do fail to account for running costs compared with up-front costs is inconclusive. Greene (2010) reviews 25 estimates based on vehicle purchases. Twelve studies find that consumers undervalue efficiency (that is, they are not willing to pay £1 up front for a £1 reduction in discounted running costs), eight find that efficiency is correctly valued and five find that efficiency is *overvalued*.[37] There may also be alternatives to the use of up-front taxes. If efficiency is not valued because it is less salient, then governments may wish to regulate how vehicle prices in showrooms or electric durable prices in stores are displayed, perhaps to include clear information on running costs alongside the purchase price.

5.2 Framing

Governments have a choice as to how to frame corrective taxes. Corrective taxes are one part of an overall price, and demand models assume in general that people respond to the price as a whole. However, if different components of the price are more or less salient, then this may not be true. Hossain and Morgan (2006) and Huck and Wallace (2010) demonstrate that the composition of prices matters using field- and lab-based experiments respectively, though neither paper explores tax in this context. Li et al. (2012) find that consumer demand for vehicle fuel in the US is *more* responsive to changes in tax rates than it is to changes in the pre-tax price. They find that increasing the tax by 5 cents reduces fuel consumption by 1.3 per cent, whilst an equivalent increase in pre-tax prices reduces consumption by less than 0.2 per cent.[38] This has potentially important implications in thinking about the optimal tax rate on fuel, which depends on the size of the marginal external costs associated with fuel use but also on how responsive demand is to price. If consumers respond more to fuel taxes than to pre-tax prices, then the optimal fuel tax rate may be lower than implied by elasticities estimated mainly from variation in the latter.[39]

If consumers respond differently to tax and pre-tax components of prices, they may also respond to other aspects of how corrective taxes are framed, such as the name or **label** attached to the tax. There is relatively little direct evidence here. McCaffery and Baron (2005) use online experiments to look at how people respond to the label 'tax' in terms of paying for public services but find no clear evidence of an aversion to the word 'tax'. It is somewhat striking, though, that a number of new corrective environmental taxes that have been introduced in the UK in recent years have avoided the explicit use of that label – consider air passenger duty, climate change levy, aggregates levy, air passenger duty, the Carbon Reduction Commitment, the carbon price support rate and so on.

Making corrective taxes more salient may actually substitute for an increase in the tax rate. Gamage and Shanske (2011) suggest there could be benefits from *reducing* the salience of a corrective tax but simultaneously increasing the tax rate. In the case of a pollution tax, for instance, this could achieve the same environmental benefits while raising more tax revenue. The pros and cons of such

[37] Bento et al. (2010) argue that some estimates suggesting that efficiency is undervalued could also be the result of a mis-specified empirical model.

[38] The explanation for this result might not be behavioural: the authors point out that whilst fuel taxes could be more salient than pre-tax prices, consumers might also think that tax increases will be permanent whilst fluctuations in oil prices might be temporary.

[39] No study similar to Li et al. (2012) has been carried out for the UK. Importantly, there has been relatively little variation in fuel taxation, certainly at the federal level, in the US, whereas UK fuel taxes have been raised and lowered much more. As a result, fuel price elasticities in the UK might be more heavily influenced by variation in both pre-tax prices and tax rates. If the Li et al. (2012) findings hold in the UK, this might suggest we would find more price-elastic demand estimates for fuel in the UK than in the US.

a reform are no different from those outlined in Section 4.2 for conventional taxation. It would still achieve the socially optimal level of the taxed activity, but, as before, it would also introduce a welfare loss by exploiting consumer inattention. Gamage and Shanske argue that this kind of reform could deliver overall efficiency gains if the increased revenues are used to reduce other distortionary taxes on income or wages. In general, we may need to be cautious of such arguments. At the extreme, making corrective taxes completely non-salient means consumers do not respond at all – rendering them useless as corrective taxes.

However, one clear danger is that if consumers later become aware of the supposedly non-salient tax, a political backlash against 'hidden' taxation might make even economically sensible changes in the rates hard to implement politically. This awareness may even be driven by the tax rate itself – taxes that are not very salient at low rates may become much more salient at high rates. A good example here might be excise taxes on vehicle fuel, which were subject to real-terms increases each year between 1993 and 1999 under an escalator policy. At the end of the period, increases in oil prices combined with real duty increases of 6 per cent per year led to record fuel prices at the pumps and, in Autumn 2000, a series of protests. Following this, duty rates were held constant in cash terms for a number of years. If fuel taxes are now much more salient to consumers, then even if, in the future, increases in carbon and congestion costs justify real increases in the tax rate, it might be much harder to implement the necessary increases. It would be interesting to assess whether behavioural responses to fuel prices and taxes were different prior to the escalator period from during and after it.

5.3 Prospect theory

In many cases, governments can think about using taxes or subsidies as methods of punishing 'bad' behaviour or promoting 'good' behaviour: taxing unhealthy food or subsidising healthy food; taxing energy or subsidising energy efficiency measures; taxing vehicle fuel or subsidising fuel-efficient cars; and so on. Loss aversion suggests that consumers may respond more to taxes than to equivalent subsidies if the tax is perceived as a loss whilst a subsidy is perceived as a gain. The usual assumption of a symmetric response to small price increases or decreases may not hold.

There is some evidence in Epstein et al. (2010), who carried out a small-scale experimental study in the US that simulated food shopping. In a baseline round, prices were fixed according to local grocery store prices. In different treatments, the price of healthy products was reduced (simulating a subsidy) or the price of unhealthy products increased (simulating a tax) by the same proportions. Taxes on unhealthy products had significant effects in improving the nutritional composition of the purchased shopping baskets, whereas subsidies to healthy products did not. Part of this result may have been driven by income effects: for example, some of the money saved on the subsidised healthy goods could have been spent on additional unhealthy goods. Schroeter et al. (2008) analyse an economic model in which consumers derive utility not just from what they consume but also from their weight (which, in turn, is determined by their consumption patterns). They show that the impact of taxes on high-calorie foods versus subsidies for low-calorie foods will depend on the degree of substitutability between them and the income effects of different policies. These results demonstrate the importance of combining modelling with empirical and experimental evidence in forming policy. There may also be an impact of how taxes and subsidies are framed that means they have differential effects. In general, this appears to be an area where more research disentangling these possible effects would be very helpful.

Prospect theory also demonstrates how changes in reference points might affect decision-making. In the context of corrective taxes, it may be that consumers **adapt** to the policies over time and incorporate the taxes into their reference point. This could reduce the ongoing effectiveness of the

policy unless the tax rate is increased. For example, when the London Congestion Charge was introduced in 2003, the drop in congestion was estimated at around 30 per cent (Transport for London, 2004), at the very upper end of pre-introduction estimates (Transport for London, 2003). However, congestion then appeared to rise back towards pre-charging levels in later years (Transport for London, 2008). Of course, this is not proof that motorists changed their reference point such that the effectiveness of the charge lessened over time (there is some suggestion that increases in the amount of roadworks had a large impact on congestion in later years). There does not appear to be much compelling empirical evidence on reference point effects in this context.

It could also be the case that measures designed to change behaviour in one area affect the reference point in other areas. For example, offering financial rewards to people who successfully give up smoking might then lead to a reference point in which rewards are expected as the norm for other 'good behaviour'.

Reference points may also generate an endowment effect in which the ownership of a good affects how it is valued. This has implications for policies such as tradable emissions permits, which are in effect another form of corrective tax policy. Rather than setting the price of emissions through the tax system, the government could set the total quantity by issuing a number of permits or quotas, and then allow the price to be determined as the permits are traded.[40] The endowment effect may mean, though, that those in the market who hold excess permits (and thus have a price they are willing to accept in order to sell them) may value permits differently from those who hold insufficient permits (and so have a price they are willing to pay in order to acquire them). Standard theory suggests that the initial allocation of permits should not matter in terms of the final allocation, since they will be traded such that those with the greatest willingness to pay (those least able to reduce pollution, in the case of emissions permits) end up holding more. Endowment effects mean that this may not hold and that the final allocation of permits will be at least partly influenced by how they are initially distributed. These effects could also mean that there are fewer trades of permits than would be expected owing to the mismatch between valuations of permit holders and buyers. This suggests that giving permits away free according to some baseline emissions level (as happened in the European Emissions Trading Scheme) is less desirable than asking market participants to bid for permits up front through an auction process before anyone 'owns' them. Similar issues would be relevant if personal carbon trading were revived as a potential future reform, an idea that was considered by the previous government (Roberts and Thumim, 2006) and endorsed by the Environmental Audit Committee (2008).

5.4 Social preferences

Externalities

If individuals are concerned about the welfare of others in making private consumption choices, then the need for corrective taxation may be reduced. For example, people may **self-internalise** the external costs their behaviour imposes on others. Ledyard (1995) provides some evidence from experimental games that people may be willing to contribute voluntarily to the provision of public goods, in contrast to the implications of the standard model. The game sees participants given a set payment. They are asked to decide how much of it to contribute to a collective pot. The total in the pot is then doubled and redistributed equally to each player. From a social perspective, if everyone put all their payment into the pot, everyone would end up twice as well off. From a private perspective, the optimal decision is not to contribute and to free-ride on the contributions of others.

[40] For a discussion of taxes and tradable permits as alternative policy options, see Fullerton et al. (2010).

The experimental results suggest that, typically, around half the total payments are contributed to the pot, although, depending on the experimental design, up to 90 per cent or so of players can be induced to act as predicted in the standard model and contribute nothing at all. The extent to which these experimental results have implications for real-world provision of public goods is also somewhat unclear.

To the extent that people self-internalise, the optimal corrective tax necessary to achieve socially optimal outcomes will be lower than the size of the marginal external cost. However, Johansson (1997) points out that this result depends theoretically on how social preferences are modelled. If generating the externality in itself reduces private well-being (more simply, if someone feels worse off if they pollute, say), then people will demand fewer polluting goods, but only because in effect the *private* costs of consumption are higher. In this case, the gap between private and social costs remains, and there is still a case for externality taxes. The case where there is a clear reduction in the optimal corrective tax rate is when people simply reduce their private consumption below that which is utility-maximising for themselves – that is, in the context of Figure 5.1, where there is no shift in the private cost curve but people simply voluntarily choose to consume less than Q_0.

This discussion highlights that whilst, intuitively, the concept of social preferences might reduce the need for corrective taxation, even from a theoretical perspective the argument is not clear. There does not appear to be much evidence on the extent to which people voluntarily self-internalise external costs and precisely what the social motivations for doing so are. This would therefore appear to be a fruitful area for empirical study.

Crowding out

Social preferences may also affect how people respond to financial incentives for pro-social behaviour. As discussed in Section 2.1, there may be concern that offering rewards (or extrinsic motivations) for making particular choices could crowd out innate preferences (intrinsic motivations) to do so. Gneezy et al. (2011) argue that this is related to **image motivation**. If part of the reason that people buy an expensive electric or hybrid car, say, is as a public demonstration of their environmental awareness, then subsidising the cars could make some people less likely to buy them if ownership is then perceived merely as a financial issue. These motivations may well be less important when actions are not publicly visible (such as whether someone has installed energy-efficient electrical appliances), and may also depend on public awareness of the financial incentives. Ariely et al. (2009) show that financial incentives increased the effort that people put into raising money for charity if the amount of effort was not known publicly. However, if the effort was public knowledge, financial incentives had no significant effect (if anything, effort appeared to fall), suggesting people were concerned not to appear to be behaving 'well' for purely financial reasons.

The extent of crowding out might also depend on how financial incentives are framed. Eckel et al. (2005) carry out an experimental game in which subjects are given a sum of money and are offered the chance to give some or all of it to a charity of their choice from a predetermined list. Subjects are told that some small amount (less than the amount they were given to begin with) has already been given to the charity. In some cases, it is not clear where the money has come from; in others, the subjects are told that there has been a 'tax' on their initial allocation and this has been given to the charity. In effect, the two situations are the same – the subject knows that some small amount has been given already and they have the chance to donate more. But in the latter case, it may feel as if the money has been taken from the subject against their will. The results show that the 'tax' frame leads to almost total crowding out of any private donations (the amount of private donation is reduced almost dollar for dollar by the amount of the 'taxed' donation), whilst the neutral frame leads to no crowding out at all (the amount that people voluntarily donate does not depend on how much the subjects are told has been donated already). From a policy perspective, this suggests that

deliberately earmarking particular identifiable taxes for particular forms of spending might lead to larger crowding-out effects than funding the same spending from general receipts.

It may also be the case that using financial incentives crowds out intrinsic motivations *not* to engage in 'anti-social' behaviour in the same way that they may crowd out incentives *to* engage in 'pro-social' behaviour. Gneezy and Rustichini (2000) found that instituting a fine for lateness at nursery actually increased lateness. Fehr and Falk (2002) suggest that this might have been because of the way in which the fine was presented – it signalled no particular social disapproval of lateness, and if the reduction in the 'disapproval' cost of lateness was larger than the fine itself, the overall 'cost' of lateness may have fallen as a result. This could mean that when crowding out is observed, the right response is to change the frame of the incentive rather than to abolish it altogether. In terms of tax policy, an interesting (and as yet little-explored) issue is whether sin taxes act to **legitimise** bad behaviour, offsetting the impact on demand of the higher price, or perhaps instead act as **social signals** that particular behaviours are disapproved, augmenting the price effect. For example, the plastic bag levy of €0.15 introduced in Ireland in 2002 reduced consumption by more than 90 per cent. The large response could at least partly be due to a small tax on a hitherto 'free' product helping to focus attention on a problem, though isolating the 'signalling' effect from the price effect (and any other attendant coverage of the tax as it was implemented and beyond) is of course very hard.[41]

Interestingly, the Gneezy and Rustichini (2000) result persisted even once the fine had been removed. This suggests that once intrinsic motivations for some activity have been undermined, it may be difficult to re-establish them. Such concerns are sometimes raised in terms of using financial incentives for things such as further education. In the debate surrounding the abolition in 2011 of the Education Maintenance Allowance – a weekly payment introduced by the previous government for people remaining in education after the age of 16 – some commentators referred to it as a 'bribe'[42] with the implication that it undermined intrinsic motives to go to school and study. However, some studies of educational payments suggest that there are long-term benefits even after the payments themselves stop. For example, Jackson (2010) found that Texan students who were paid for achieving high exam results got better grades, were more likely to attend college and were more likely to stay in college beyond freshman year. A summary of the literature can be found in Gneezy et al. (2011).

It is possible to over-interpret the impact of social preferences for tax policy. We know of no studies where it was found that corrective taxation had a response with the 'wrong sign' (for example, higher energy taxes leading to higher energy use) as a result of crowding out or taxes acting to legitimise behaviour. There appears to be relatively little direct evidence for national tax policy on these issues.

5.5 Conclusions

Behavioural insights have a number of implications for corrective taxes, and we pull together some of the issues in terms of implementing carbon taxes in Box 5.1. Of course, we do not offer the list in the box as an exhaustive summary of issues that should guide whether and how to tax carbon, merely to illustrate the issues discussed in this chapter in the context of a single policy example.

[41] Convery et al. (2007) report survey evidence from before the tax was implemented suggesting that only 8 per cent of consumers were willing to pay more than around €0.08 for a bag, so a very large demand response from a tax almost double that amount may not be surprising.

[42] See, for example, Allison Pearson, 'If teenagers need cash, they should get a Saturday job', *Daily Telegraph*, 21 January 2011 (http://www.telegraph.co.uk/comment/columnists/allison-pearson/8273943/If-teenagers-need-cash-they-should-get-a-Saturday-job.html).

Box 5.1. Behavioural insights for taxing carbon

Reducing carbon emissions is one of the most pressing policy challenges facing the government. There is a long-term objective to reduce emissions to 20 per cent of their 1990 levels by 2050, with rolling 'carbon budgets' set by the independent Committee on Climate Change enshrined into UK law. Economists have frequently made the case for establishing a clear, consistent emissions price to help meet these objectives at the lowest cost, though as recent research has demonstrated, UK policy seems to be a long way from this ideal at present (see, for example, Advani et al. (2011)).[a] A tax on carbon would be one way to introduce such a price,[b] though behavioural economics has a number of key insights for how such a policy could be most effective.

- Many consumers do not appear to install energy efficiency measures (such as insulation) that would pay for themselves through reduced bills. If this is related to time inconsistency – perhaps people procrastinate in getting around to having the products installed, or the hassle costs are up front whilst the benefits of reduced bills are more far distant and so heavily discounted – then carbon taxes might help people commit to having the products installed. If consumers are time inconsistent, though, policies that promise higher carbon taxes in the future might be relatively ineffective at changing behaviour today.
- Taxes on carbon may be more successful at reducing emissions than subsidies for energy efficiency measures if consumers are loss averse.
- Carbon taxes will have little impact on energy use if they are not particularly salient. Consumers who pay bills by direct debit may not even be aware of the tax or energy prices, and so other ways of communicating information on the carbon costs paid by households may need to be considered. Carbon taxes that are only paid by firms would be even less salient to consumers if they are perceived only as a general increase in consumer prices rather than as a direct cost to households.
- How a carbon tax is framed may affect the response to it. Even the name might be important. If people dislike paying a 'tax', they may reduce consumption more than if prices rise for other reasons. Hardisty et al. (2010) carried out an experiment to show that people are less happy to choose more expensive products when the price difference is labelled as a carbon 'tax' rather than as a carbon 'offset'.
- People may have intrinsic motivations to reduce energy use. A carbon tax should not legitimise additional pollution. Combining taxes and other policies that send a strong social signal could be effective. For example, the Carbon Reduction Commitment taxes the energy use of mid-sized firms but includes a public league table ranking participating firms according to a number of energy-related criteria. If firms care about their public image (that is, have social preferences for how they are perceived rather than being pure profit-maximisers), this league might create additional incentives on top of the tax to reduce energy use.[c]

a. Of course, there may be reasons to want to set different prices for different sectors – such as lower taxes on households if distributional concerns about higher energy prices are important, or lower taxes on energy-intensive sectors which might be driven offshore by high taxes.

b. Though any tax would also need to be mindful of other instruments used to reduce emissions which impose implicit carbon prices. These include regulation and also potentially 'nudges' such as providing feedback on energy use to consumers (Allcott and Mullainathan, 2010).

c. The first league table was published in November 2011 (see http://crc.environment-agency.gov.uk/pplt/web/plt/public/2010-11/CRCPerformanceLeagueTable20102011). Of the 2,103 organisations listed, 22 tied for first place whilst no fewer than 803 – almost 40 per cent of the total – tied for last place.

The optimal tax rate of an externality-correcting tax could be higher than implied by the standard model if there are additional 'internalities' or if people make irrational consumption decisions. On the other hand, the optimal rate might be lower if, to some extent, consumers are willing to self-internalise. Both results may hinge on precisely how the behavioural problems manifest themselves – why consumers are not able to make time-consistent choices, or the way in which they take account of the welfare of others in their own decision-making. How these concepts interrelate in particular issues of tax policy is not clear. Much of the empirical literature has focused on behaviours such as smoking, where models based on hyperbolic discounting suggest a considerable additional justification for corrective excise taxes from internalities, but where less has been said about the extent to which smokers might be willing to self-internalise as well. There is much less quantitative assessment of the importance for tax policy of taking account of these behavioural issues outside the smoking case.

The way in which corrective taxes are framed, labelled and made relevant to the intrinsic motivations that people have to act appears to have an impact. Further experimental and field studies attempting to quantify and disentangle these effects would be useful, to understand how generalisable the results are, whether they imply significant changes to optimal policy and whether findings that emerge in laboratory settings have much resonance for real-world decision-making. Even less understood are the long-term implications of corrective tax policy – how reference points adapt to taxes and what this means for the optimal *trajectory* of policy as opposed to the level of taxes at a given time, or how behaviours respond even once corrective tax and subsidy policies are removed.

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6. Redistribution

Summary

Redistribution of income from rich to poor is one of the most significant aspects of tax and benefit policy, leading to a substantial compression of the income distribution. This chapter focuses on interpersonal redistribution between rich and poor at a moment in time, although Box 6.1 explores behavioural insights for retirement saving (redistribution across time) and Box 6.2 summarises the implications for a significant overhaul of welfare policy, the introduction of Universal Credit in the UK.

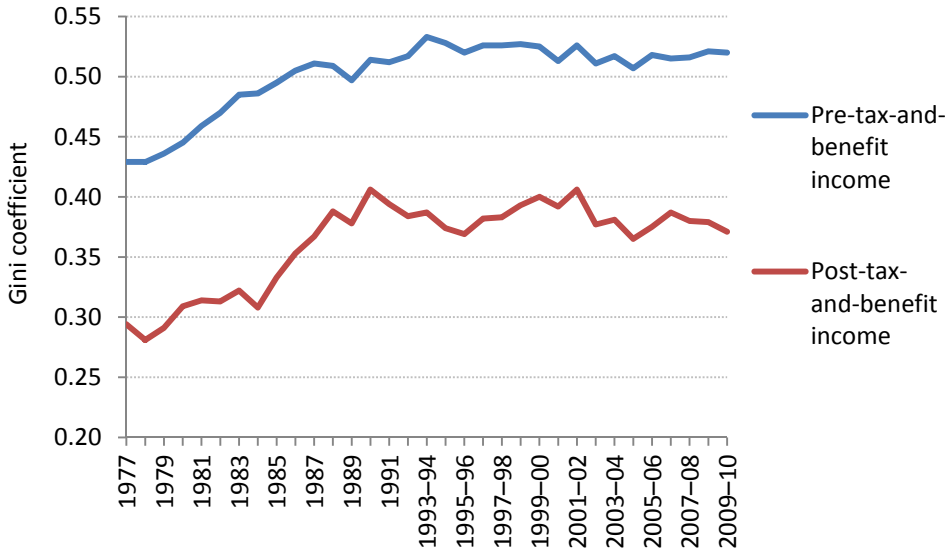
Behavioural economics has implications for a number of different aspects of redistribution policy:

- **Fraud and error** Costs of complexity for boundedly-rational consumers, or stigma for those with social preferences, might suggest that introducing 'ordeals' into the process of welfare payments would deter fraudulent claims. However, there are certainly conceptual reasons to believe that adding complexity to the benefits system alone is a poor way of targeting payments effectively. Using in-kind transfers rather than cash payments could be another way to reduce fraud, but empirical evidence suggests this has important effects on how the resources are used, which might be undesirable.
- **Influencing how benefits are used** The label attached to benefits seems to affect how the money is spent – for example, there is strong evidence that Winter Fuel Payments are much more heavily devoted to domestic energy than other forms of income. This may be the desired intention of the label, but it also makes clear that the framing of benefits is not neutral. Altering the timing of payments might also affect outcomes: paying benefits in larger but less frequent instalments could help people to budget but might lead to self-control problems as well.
- **Work incentives** People who procrastinate, or who are overly optimistic, or who are time inconsistent, may not search for work as much as they would if acting fully rationally. This could justify time-limiting benefits or providing return-to-work bonuses. There is evidence that these have been effective, although time limits have been found to be quite crude in some models.
- **Support for redistribution** Under social preferences, people may benefit directly from greater equality. There is laboratory evidence that people consider how their outcomes compare with other people's, and theoretical models show that optimal taxes become more progressive when people care about how their outcome relates to outcomes on average. But stated preferences for redistribution appear susceptible to framing effects. Charitable giving may indicate that people care about redistribution, at least towards causes they support. The extent of giving seems to respond to financial and tax incentives, but again how these incentives are presented is not a neutral part of the policy and can affect outcomes.
- **Tax progressivity** Poorer consumers may be more or less attentive to different types of taxation, which could affect their distributional impact. There is some evidence that low-income people are more attentive to unlabelled taxes on cigarettes in the US, for example, and under time inconsistency if the commitment benefits from cigarette taxes are higher for poorer households, tax increases might actually be progressive. However, the evidence is not that broad and interactions between responsiveness and tax incidence also need to be considered.

This chapter examines what light behavioural economics sheds on tax and benefit policy designed to redistribute incomes. Sections 6.1 to 6.4 focus on the issue of redistribution from 'rich' to 'poor' at a point in time, or what might be termed **interpersonal** redistribution. Before then, Box 6.1 explores another important issue, which is how tax policy can help encourage redistribution across the life cycle of an individual (**intrapersonal** redistribution), from times when someone is relatively well off to times when someone is relatively badly off, discussing in particular tax incentives for retirement saving.

Redistribution is a significant aspect of tax and benefit policy. Barnard et al. (2011) estimate that the Gini coefficient[43] of household incomes before taxes and benefits in the UK in 2009–10 was 0.520, whilst after taxes and benefits it was 0.371. Tax and benefit policy significantly compresses the income distribution, and has done so for many years, as Figure 6.1 illustrates. In the late 1970s and early 1980s, the post-tax Gini was around 33 per cent smaller than the pre-tax Gini. This fell to a low of 21 per cent in 1990, rose again in the early 1990s and has remained at around 25–30 per cent for most of the last ten years.

Figure 6.1. Pre- and post-tax-and-benefit Gini coefficients



Note: Data switch from calendar-year to fiscal-year basis in 1993.
Source: Office for National Statistics, *The Effects of Taxes and Benefits on Household Income*. Based on household equivalised income information from the Living Costs and Food Survey and its predecessors.

Redistribution, though, is not just about transferring income from high-income to low-income households. Policymakers might also want to encourage low-income households to spend money in particular ways, reduce the disincentives to work inherent in providing means-tested support for poor households, and minimise fraud and error in the benefits system. Estimates from the Department for Work and Pensions (2012a) suggest that fraud and error led to benefit overpayments of around £3.2 billion in 2010–11 (of which £1.2 billion was estimated to be the cost of benefit fraud), and errors led to *under*payments of about £1.2 billion. A further crucial issue for benefits is non-take-up amongst those eligible: the Department for Work and Pensions (2012b) estimates a take-up rate for income-based Jobseeker's Allowance of 60–67 per cent in 2009–10. Behavioural insights are relevant to all these aspects of redistribution policy.

[43] The Gini coefficient is a measure between 0 and 1, where 0 ('perfect equality') implies that income is distributed perfectly equally across households and 1 ('perfect inequality') implies that a single household commands all of the income. Thus higher values of the Gini are associated with increased inequality.

Behavioural economics could also have implications for the progressivity of different taxes. Understanding the distributional implications of behavioural economics was noted as an important, under-explored area in Dolan et al. (2010). Conventional analysis of how progressive a particular tax is depends on how the amount paid as a proportion of income varies between rich and poor. More properly, we should think about whether the tax leads to proportionally larger or smaller welfare costs for higher-income people and what the implications of behavioural economics for these costs might be. One issue, as suggested by Bertrand et al. (2004), is that the welfare costs of behavioural biases are, by nature, more significant for poor households, for whom welfare is lower in the first place. It may also be the case that the poor are more prone to biases (such as time inconsistency or bounded rationality) than the better off. Choi et al. (2011) find evidence that higher-income households are more 'rational' in the sense that, in an online experiment, they are more likely to make economic choices that are consistent with the standard economic model, though the authors do not relate this result to any particular behavioural phenomenon. We discuss evidence relating to particular models below.

Finally, behavioural insights are relevant for public attitudes towards redistribution and the economic rationale to redistribute at all. Behavioural models suggest that individual well-being might in itself be partly dependent on the well-being of others, or even on the distribution of well-being itself – if people 'dislike' inequality, then redistributing income could improve individual as well as social welfare.

Box 6.1. Redistribution across the life cycle: behavioural insights for retirement saving

An important part of redistribution policy is intergenerational: taxes paid by working-age adults help to pay for retirement benefits for older people. There is mounting concern, however, about increasing dependency ratios in developed countries and the ability of future generations of retirees to be supported by a smaller group of working people. As a result, much interest has focused on encouraging private provision of retirement income to reduce the extent to which future pensioners will need to rely on the state for income support. Completely rational, forward-looking workers might anticipate this by themselves and voluntarily save for their own retirement. However, time-inconsistent, procrastinating, unduly optimistic, boundedly-rational workers suffering self-control problems and basing their decisions on a reference point in which current pensioners receive relatively generous state support and projecting that will continue might well fail to save for retirement (Laibson et al., 1998; O'Donoghue and Rabin, 1999; Diamond and Koszegi, 2003). The Pensions Commission (2004) estimated that perhaps 9 million people were under-saving for their retirement.

One important policy lever that has been used to encourage private retirement saving is generous tax treatment.[a] HMRC estimates suggest that relief from income tax and National Insurance contributions for money paid to pension schemes will cost more than £36 billion in 2011–12.[b] Wakefield (2009) shows that pension contributions, in particular employer contributions, are by far the most favoured assets in the tax system.

A survey of the evidence for how effective such tax-favouring might be at increasing saving is given in section 3 of Crossley et al. (2012). They argue that whilst there is evidence that making pensions saving more tax-favoured leads to more pensions saving, it is not clear that it leads to more *overall* saving rather than people switching from one form of saving into pensions because of the tax incentives.

McCaffery (2008) argues, using behavioural insights, that tax-favouring retirement saving might be relatively ineffective. If savers are time inconsistent, giving tax relief when the pension pot is withdrawn on retirement provides relatively little incentive to save since the gains would be

distant for most people. At the same time, tax-exempting contributions to retirement saving could, in principle, lead to people borrowing more (with heavily discounted future interest liabilities) to finance additional pension contributions, reducing their current tax liabilities and thus increasing spending today.

In terms of retirement saving, the most influential application of behavioural economics has been the idea of **auto-enrolment**. If part of the reason that relatively few workers make private provision for retirement is the hassle cost of signing up to a pension scheme, or procrastination in the belief that they will eventually get around to it, then changing the default to be that workers are enrolled automatically into retirement saving unless they choose otherwise could have significant effects. The policy is set to be rolled out in the UK from October 2012. Employers (starting with larger employers before being rolled out to all employers over the following five years) will be obligated to enrol most workers aged between 22 and retirement age into a retirement saving scheme. Employers will be able to choose from any qualifying scheme, or have the option to enrol workers into a new scheme known as the National Employment Savings Trust (NEST), which (unlike other schemes) must accept all employees. The default contribution rate to NEST will be 4 per cent of earnings, matched with 4 per cent from employers and tax incentives. Employers and employees will be free to do more.

There is a great deal of evidence, largely from studies of individual companies that moved into auto-enrolment in the US, that defaulting people into retirement saving increases the proportion of workers who have pension funds. There is a survey of the evidence in section 5 of Crossley et al. (2012). Typically, participation rates increase by 30–40 percentage points following auto-enrolment. However, there is also huge evidence that the default matters not just for whether someone saves but also for how much they save and in what form. People tend to stick to the default rate of contributions and the default investment plans. As a result, if default contribution rates are low and default funds conservative, some people might end up under auto-enrolment with smaller retirement pots than they would have had otherwise. Picking the 'right' default therefore appears to be very important. Some thought does seem to have gone into these issues in the design of NEST (for details, see Crossley et al. (2012)). For example, there are different default plans for workers of different ages – if defaults matter, it seems sensible that younger enrolled workers should not be defaulted onto the same plan as older ones, given the different time horizons over which they would be saving. The risk profile of default plans also starts off relatively low, before increasing with age then falling back as retirement nears. An 'optimal' profile might see risk starting high and diminishing with age. However, starting with high-risk investments might see losses incurred early on, which might deter new savers from continuing to participate in the scheme.[c]

Further evidence that behavioural factors can be influenced to affect retirement saving comes in a recent study by Choi et al. (2012). They send emails to employees of a company in the US, telling them about employer contributions available for their retirement plan. Different groups of workers are randomly given versions of the email containing different **cues** that might influence the decisions of boundedly-rational savers. These include anchors which highlight particular aspects of the retirement scheme, such as the maximum or minimum contribution rates, or provide example 'savings goals'. These cues are found to have significant effects on the amounts contributed in both the short and medium term, presumably at relatively low cost.

a. See http://www.direct.gov.uk/en/Pensionsandretirementplanning/Companyandpersonalpensions/Startingacompanyorpersonalpension/DG_10026927.

b. See http://www.hmrc.gov.uk/stats/tax_expenditures/table1-5.pdf.

c. See http://www.nestpensions.org.uk/schemeweb/NestWeb/includes/public/docs/understanding-reactions-to-volatility-and-loss,PDF.pdf.

6.1 Bounded rationality

One concern in the benefits system is to minimise **fraud**. When eligibility is limited through means-testing or other criteria, policymakers need to prevent people receiving benefits to which they are not entitled. If entitlement is not perfectly observable or enforceable, there are other methods that could be incorporated into the system. These generally try to increase the costs of claiming to deter the ineligible. For example, some **screening** process could be put in place to ensure that applicants are legitimately entitled to receive a particular benefit: asking people to provide documentary evidence of eligibility and to fill in forms, attend interviews, undergo testing and so on.[44] Or the **ordeal** associated with a particular screening process could be made more onerous – forms can be made more complex, for example. Of course, these methods might reduce fraudulent benefit claims but could also deter legitimate claimants and reduce take-up.

The concepts of 'screening' and 'ordeal' are distinct but clearly related. They can be distinguished by thinking of the screening as a process that reveals information to help policymakers decide the legitimacy of a claim and thinking of the ordeal as the welfare cost of a given level of screening but which has no informational content in itself. For example, ordeals might reflect a **stigma** cost (Moffitt, 1983), but stigma would only influence behaviour if the way in which people are perceived affects well-being through some sort of social preference. Behavioural insights also suggest that if consumers are boundedly rational and find it hard to deal with complexity, then ordeals can be generated by making the application process less straightforward. Currie (2004) reviews the literature and finds that the **transactions costs** of claiming benefits may be more important than pure stigma in explaining take-up rates.

Kleven and Kopczuk (2011) set out an economic model in which both the amount of screening and the ordeal costs are under the control of policymakers. However, they note that if the ordeal costs for a given amount of screening are higher for legitimate claimants, raising the cost could increase the optimal amount of screening necessary to distinguish the remaining genuine claimants from fraudulent ones. This suggests that if we believe the costs of complexity are likely to be larger for the group the benefit is targeting (usually low-income people), adding unnecessary complexity to the claim process simply as a way of deterring fraud is a poor idea.

There is no clear direct evidence that low-income households or benefit recipients are more likely to be boundedly rational, and this would seem to be a ripe area for future study. Antonides et al. (2011) elicit a measure of the extent to which a sample of Dutch households rely on mental accounting, dividing spending into separate 'pots'. They find a negative correlation with income and educational attainment. One important issue for study might be the direction of causality between bounded rationality and income or other measures of well-being.

6.2 Framing

Presentation of benefit payments

In making benefit payments, governments may wish not just to redistribute income to poor households but also to directly influence how the money is used. A growing body of research

[44] For example, in the UK, recipients of Incapacity Benefit are undergoing a rolling 'work capability assessment' to determine their entitlement to continue to receive its successor benefit, Employment and Support Allowance (ESA). New claimants of ESA are given the same assessment. Those who are deemed capable of work may instead be eligible to receive Jobseeker's Allowance but will be expected to seek work. The process involves filling in a 21-page questionnaire (see http://www.direct.gov.uk/prod_consum_dg/groups/dg_digitalassets/@dg/@en/@money/documents/digitalasset/dg_195544.pdf) and could also include a medical assessment.

evidence shows that how benefits are framed influences how they are used. Here, we interpret 'framing' as simple aspects of presentation that ought not to have any direct influence on behaviour in the standard model. We do not look at factors such as how frequently benefits are paid and to which member of a couple they go (such as the 'wallet to purse' reform of Child Benefit in the UK in the 1970s (Lundberg et al., 1997), which saw payments given directly to mothers). These factors may change outcomes for behavioural reasons, but would also be expected to have an effect in the standard model if, for example, people are credit constrained or if within-couple incomes are not fully pooled.

Perhaps the clearest example of a frame is the **name** of the benefit. In principle, a given cash transfer to a household should lead to the same effect on consumption and saving regardless of what the transfer is called. However, if benefit recipients allocate income into different **mental accounts**, then attaching a different label to the benefit could reallocate the money from one account to another and thus change behaviour. Some studies have suggested that benefits labelled as child benefit are spent differently from other income. Kooreman (2000) exploits a policy change in the Dutch child benefit payment in the early 1980s, which saw reduced payments for younger children, and finds that a marginal increase in child benefit leads to much more additional spending on children's clothing than the same increase in other income. By contrast, Blow et al. (2012) exploit unanticipated policy variation in UK Child Benefit rates to conclude that Child Benefit is spent disproportionately on 'adult' goods (particularly alcohol) rather than 'children's' goods. Rather than mental accounting, they argue that this result is consistent with parents fully insuring spending on their children against unexpected income shocks.

Labelling effects have been found in a study of Winter Fuel Payment in the UK. WFP is a universal cash transfer to households containing someone aged 60 or over, worth £200 (or £300 if the household contains someone aged 80 or over) in 2012–13. The payment is automatic for qualifying households (so there are no issues of non-take-up) and is made as a lump sum, normally in November or December. Beatty et al. (2011) exploit the strict age eligibility criterion to estimate the impact of WFP on the money households spend on domestic energy. There is no obligation to spend the WFP on energy, and so in principle no reason to think it would be spent any differently from any other form of income. However, the authors find on average that 41 per cent of the WFP is devoted to domestic energy, compared with only 3 per cent of other income.[45]

Other evidence for mental accounting suggests that paying benefits as in-kind transfers (restricting how the money is spent, such as food stamps in the US) rather than cash can affect patterns of spending. In the standard model, this should not happen, at least so long as the in-kind benefit is worth less than would have been spent on the product anyway. Imagine someone who routinely spends £50 per week on groceries receiving a £5 'food benefit' which can only be spent on grocery shopping. In principle, they spend their usual £50, receive the benefit and are £5 better off, the same outcome as if they were simply given a cash benefit of £5. However, a number of studies have suggested this is not the case. Abeler and Marklein (2010) demonstrate the effect using vouchers, akin to an in-kind benefit. In a field study, people given a drinks voucher at a restaurant spend more on drink than those given general bill discounts. A number of studies in the US have found that giving benefits as food stamps increases the amount spent on food over and above what would happen if the benefit were paid as cash – a summary is given in Fox et al. (2004). Mental accounting would explain these findings – the drinks voucher increases the 'drinks budget' in the restaurant and the food stamp the 'food budget' in the household.

[45] It is possible that some of the result is driven by the timing of the payment, though the authors find no clear evidence that the results differ by season.

Providing benefits in kind rather than as cash may also reduce their attractiveness to fraudulent claimants (Coate et al., 1994), but these results would indicate that such a move would not be neutral in terms of the wider behaviour of legitimate benefit recipients.

It may be that framing of benefits has other effects – for example, on the willingness to claim them or on the perceptions of those who do – though there does not appear to be any empirical evidence on these issues.

Salience and progressivity

In terms of tax policy, framing effects can alter the salience of taxes, as discussed in Chapter 4. Salience also has implications for the progressivity of taxation, if poorer consumers are more or less **attentive** to taxation than richer consumers. This could depend on the tax: poorer consumers might be more attentive to taxes on necessities such as food or energy, which make up a larger proportion of their budget. If so, this might mitigate the regressivity of food or energy taxes to some extent – less attentive richer households will react less to changes in the tax rate and thus 'over-consume' the good, leading to additional welfare costs. It follows that altering the salience of taxes can affect their progressivity. The Chetty et al. (2009) study discussed in Chapter 4 highlighted that taxes that were only added at the till and not included on labelled prices were less salient. Goldin and Homonoff (2010) extend the model to demonstrate that a revenue-neutral shift from a labelled tax to a till-only tax would, in effect, be a way of redistributing towards consumers who were attentive to the tax in any case from those who were only attentive to the tax when labelled. They find evidence that in the US, low-income consumers are *more* attentive to till-based taxes than high-income consumers, suggesting that taxes could be made in effect more progressive by shifting them towards less visible forms. Whilst it is not at all obvious that manipulating the way that taxes are presented for distributional reasons is a sensible policy approach (it certainly seems an indirect way to redistribute), it does highlight that how taxes are framed can have distributional consequences, whether intended or otherwise.

A possible complication in reducing salience, however, is that it can also affect the **incidence** of taxation – that is, whether it falls on the consumers or on the suppliers of the good being taxed. In general, the incidence of a tax depends on how responsive consumers and firms are to changes in prices. The more responsive consumers are to changes in prices, the harder it will be for firms to pass the tax burden on to them by setting higher prices. Consumer demand is likely to be less responsive to tax-induced price changes when taxes are less salient. This will increase the incidence of the tax on consumers; indeed, Goldin and Homonoff (2010) note that this might offset their findings regarding the impact of a shift from more to less salient forms of taxation.

6.3 Time inconsistency

In Section 5.1, we described how time inconsistency could lead to corrective taxation acting as a commitment device helping people stick to their preferred consumption plans such as giving up smoking. The value of taxation as a **commitment** mechanism in this sense could vary systematically across the income distribution – for example, if poorer consumers were more 'present-biased' in a hyperbolic discounting model, they would derive greater commitment benefits from cigarette taxes. This might serve to reduce the regressivity of higher cigarette taxes. Indeed, some calibrations carried out for US smoking taxes by Gruber and Kőszegi (2004) find that tax increases might be progressive once the commitment benefits are taken into account.[46] Their

[46] However, some studies point the other way: Gospodinov and Irvine (2009) estimate cigarette consumption price responsiveness across education groups in Canada and find no evidence that low-education groups would benefit more

findings depend on various assumptions about differences in the value of life, discount rates, present bias and price sensitivities across income groups, but point to the possibility that, at least in some circumstances, the role of tobacco taxes as a commitment mechanism also has important distributional effects. Importantly, the authors allow price responsiveness to vary across income groups based on estimates from a demand model but assume that discount rate parameters in the hyperbolic discounting function are the same across groups. Some studies suggest differences in the degree of present bias or other measures of time inconsistency. Paserman (2008) finds unemployed workers previously on low incomes are more present-biased than unemployed workers previously on high incomes. Banerjee and Mullainathan (2010) propose a model where temptation costs are greater for the poor than for the rich. They suggest this is plausible if the desire for 'tempting' goods such as fatty and sweet food is relatively quickly sated such that tempting goods make up a bigger share of demand for poorer than richer households. They offer some descriptive evidence from developing countries that this might be the case.

In terms of benefits and welfare policy, time inconsistency has a number of implications. One concerns the extent to which providing means-tested support to low-income people blunts their incentives to take paid work and what that may mean for the design of benefits.[47] For example, people may procrastinate in seeking work or put in relatively little job-search effort because the costs are up front (writing applications, updating CVs, attending interviews, researching vacancies) and the gains are more distant (future wages that are high relative to unemployment benefits, which may only arise after some experience has been acquired).[48] Unemployment benefits may therefore come with restrictions such as time limits or requirements to demonstrate that people are actively searching for work. In the UK, for example, people claiming Jobseeker's Allowance must demonstrate they have a 'jobseeker's agreement' detailing the hours and type of work they are looking for, they are not allowed to unreasonably refuse employment offers and they are eventually moved into New Deal programmes, which offer more targeted support to find work. Failure to comply can lead to sanctions that reduce payments. Another possibility is to provide up-front bonuses for finding work and coming off benefits – for example, lone parents can receive an In-Work Credit, which provides additional tax-free income for the first year after finding work and which appears to have been successful in raising employment rates (Brewer et al., 2011a).

Fang and Silverman (2009) carry out a simulation exercise based on data on lone mothers in the US who have to choose between staying at home while claiming benefits and entering work. They estimate substantial amounts of present bias, which mean some people fail to act optimally, not starting work in the belief that they will do so in the future. Interestingly, though, the authors find relatively little welfare cost from people making present-biased choices in their model.[49] They also find that time-limiting of benefits is such a crude commitment device that it actually reduces utility even as it encourages more work. Paserman (2008) carries out a simulation exercise based on data

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from any commitment value of higher taxes. This highlights the need for caution in extrapolating the results from a single study in a single country, and the desirability of a firm UK-specific evidence base to inform tax policymaking here.

[47] Other behavioural aspects such as bounded rationality are potentially important here as well. For example, if the benefits regime is complicated, people may fail to respond in the way predicted by the standard model. Of course, the advantage of complexity in benefit withdrawal reducing the disincentive to work could be offset by complexity deterring take-up in the first place. It may well also be the case that low-income households actually have stronger incentives to consider the implications for their income of changing whether and how much they work.

[48] Prospect theory suggests that people may be unduly optimistic (attach incorrect decision weights) about their likelihood of finding a job, and so underestimate how much they need to search. They may also anchor their expectations about what wage they can get from a new job to their previous wage and interpret anything lower as a loss relative to that reference point rather than a gain relative to unemployment benefit. For a discussion of these issues and the possible implications for welfare policy, see Tarr and Riley (2010).

[49] Their analysis of the impact on utility only considers the utility of the individuals, and so does not consider the possible social welfare implications of, for example, reduced benefit payments, or any spillovers from increased labour force participation.

on unemployed male workers in the US choosing how much effort to put into searching. More searching raises the likelihood of finding work, increasing future utility but reducing current utility through the increased cost of search. He also examines various policy reforms designed to overcome present bias. The largest utility gains come from providing return-to-work bonuses and job-search assistance, but both are costly. Van der Klaauw and van Ours (2012) use Dutch data and estimate that benefit sanctions are more effective than re-employment bonuses at getting people back into work. This may be because sanctions generate up-front losses whilst bonuses give distant future gains.[50]

Time inconsistency might also mean that the **frequency** with which benefits are paid, or the **timing** of payments, has an effect on behaviour. Time-inconsistent people may plan to smooth out their spending between receipts of benefit payments, but are tempted to binge when they receive the money and then have to live frugally afterwards. Stephens (2006), using UK expenditure survey data, finds evidence that people increase expenditure when they receive their regular pay cheque and that these effects are larger for low-wealth households. In a study of recipients of social security (retirement benefits) in the US, Mastrobuoni and Weinberg (2009) find that those who rely on benefits consume around 25 per cent fewer calories the week before their benefit receipt than the week after. Stephens (2003) also finds a failure of consumption smoothing for social security recipients. Shapiro (2005) finds that recipients of food stamps consume 10–15 per cent fewer calories over the month following receipt of the stamps than immediately when they obtain them.[51] These results might suggest that providing smaller benefit payments more frequently (weekly rather than monthly, say) helps low-income consumers overcome the temptation to 'splash out' and then suffer until the next payment. On the other hand, providing unemployment benefits at less frequent intervals could help people prepare for the transition into employment, where salaries are typically paid monthly. In this case, it would seem sensible to consider offering advice on helping recipients plan and stick to budgets as part of any welfare support package.

6.4 Social preferences

Preferences over redistribution

Social preferences could influence the extent to which people support or desire redistribution policies. The issue for policymakers is to try to understand precisely how social preferences manifest themselves and what this means for optimal redistribution. If inequality in general reduces individual welfare, then there is additional rationale for policies that reduce inequality. Boskin and Sheshinski (1978) show that optimal taxes become much more progressive when people care strongly not only about their own consumption but also about how their consumption compares with the average. Or it may be that people compare their outcomes with those of people in a reference group, so that redistribution within the group affects individual well-being but

[50] The bonuses they study were only payable after at least 6 months of employment, which might explain why they had little impact in contrast to the UK In-Work Credit which was payable from the start of re-employment. Prospect theory suggests that sanctions for non-compliance that are framed as losses against the reference point of the usual benefit payment will be more effective than bonuses for compliance. The complexity of a sanctions regime may also determine its effectiveness – if boundedly-rational people do not understand the conditions under which they will be sanctioned, it is not clear how much impact the sanctions will have. Evidence from Goodwin (2008) from focus groups with lone parents suggested a limited understanding of the sanctions regime around Work-Focused Interviews, introduced into the Income Support benefit in the UK in 2001.

[51] These findings are consistent with time inconsistency when people are subject to short-term credit constraints. Huffman and Barenstein (2004) also find evidence from UK spending data of a decline in outlays between pay cheques, but find too that this exists even for people with credit cards who should not face such constraints. They suggest an additional behavioural effect where consumers do not use their credit cards to smooth spending if card and cash outlays are seen as different 'mental accounts'.

redistribution outside it does not. Frank (2005) provides neurological and economic evidence that such 'local rank' effects matter for well-being.

However, just as behavioural insights suggest that preferences in general may not be immutable to seemingly trivial aspects of presentation, McCaffery and Baron (2005) make the important point that the extent to which people appear to support redistributive policies is also strongly influenced by how they are framed. The authors demonstrate this in several laboratory studies. Three examples are:

- The **metric effect** Subjects favour more progressive income taxes when rates are given as percentages of income than when they are given in cash terms.
- The **Schelling effect**[52] Subjects say they prefer progressive tax breaks for having children (giving poor parents relatively more). This implies that they should prefer tax penalties for *not* having children to be regressive – but when asked about this, they indicate the opposite.
- **Disaggregation bias** Subjects are asked what their preferred post-tax income distribution would look like. They are then given a particular tax schedule for a hypothetical 'income tax' and are told they can set their own 'payroll tax' schedule on top (or vice versa). Both taxes are essentially the same (in the experimental set-up), meaning the subject could set whatever schedule they liked to achieve their preferred outcome. But, in general, people view each tax in isolation – for example, they are not willing to set very progressive payroll taxes to offset regressive income taxes, meaning the ultimate distribution is less progressive than they have indicated they would prefer.[53]

Charitable giving

If people care about the well-being of others, then as well as having preferences for redistribution carried out by policymakers, they may also engage in private redistribution such as charitable giving. Tax policy may be used to encourage charitable donations – for example, by offering tax breaks on donations. Andreoni and Miller (2002) use an experimental set-up in which subjects are given tokens that they can keep or give to someone else. The value of the tokens changes when they are given away, simulating a 'cost' of giving which may be positive or negative. The authors find evidence that people give less when the cost of giving rises, suggesting that tax incentives to encourage donations may be effective. Research from Scharf and Smith (2011), looking at the UK Gift Aid scheme for charitable giving, suggests that the *form* of tax break also matters for outcomes. Under Gift Aid, charities can claim additional 'matched' donations paid by the government worth £25 per £100 given by UK taxpayers. In addition, higher-rate (40 per cent) taxpayers can claim a tax rebate of £25 per £100 donated. The researchers find that shifting Gift Aid towards a larger direct match (allowing charities to claim an additional 50 per cent match on donations from higher-rate taxpayers and abolishing the rebate, for example) would increase overall charitable giving. They find little evidence that higher-rate taxpayers respond to matching by giving less, even though by doing so they could still in effect donate the same amount following the bigger match.

[52] See Schelling (1981).

[53] This result could help explain why policymakers often appear keen to try to ensure individual taxes are progressive, even at the cost of introducing additional complexity or inefficiency to the system, rather than trying to focus on an optimal system of taxation overall that balances equity and efficiency.

6.5 Conclusions

Income redistribution is one of the most important functions of the tax and benefit system. An enormous amount of policy activity is currently focused on changes to the structure of benefits, and behavioural insights could be crucial in developing well-crafted reforms. Box 6.2 summarises some of the issues for the introduction of Universal Credit.

The evidence in this chapter suggests that manipulating the framing or transparency of tax and benefit policy has real consequences for redistribution, but it seems like an indirect and unpredictable way to redistribute. In particular, the empirical evidence for how framing and salience affect distributional outcomes is limited to a few case studies of particular taxes, rather than giving easily generalisable results. It may be that low-income consumers are more present-biased but also less attentive to prices, which would give conflicting results about the distributional impacts of 'behavioural biases'. Or it may be that low-income consumers are more attentive to some taxes and less to others. Developing the UK evidence base in this area seems an important priority for research. Nevertheless, in general, policymakers ought to be aware that framing is rarely neutral in the design of new or the reform of existing redistribution policies.

Behavioural findings could imply that people fail to search adequately for work for a number of reasons, which suggests a need to build search incentives into unemployment benefits or to provide temporary bonus payments for those who find work. There is some evidence that such policies can be effective, although whether they are cost-effective is less clear-cut. Sanctions for a lack of search effort appear to have had some impact, but the design and understanding of the sanctions system are important.

Social preferences are clearly a major aspect of redistribution. The debate around what influences happiness ought to include a focus on inequality and local ranking, as well as individual-specific outcomes.

Box 6.2. Universal Credit

A major reform of the UK benefits system will see a new benefit, Universal Credit (UC), introduced from 2013 to replace the current system of means-tested benefits and tax credits for working-age adults. The present system includes Income Support, income-related Jobseeker's Allowance and Employment and Support Allowance, Housing Benefit, Working Tax Credit and Child Tax Credit. Under the new system, an additional pound of earned income above some disregard (which will depend on personal circumstances) will lead to a 65p reduction in entitlement to UC. This will be more generous than the system currently in place, extending the reach of in-work support further up the income distribution. The value of UC will be subject to a cap. Details and a discussion of the proposed system can be found in Brewer et al. (2011b).

There are a number of relevant behavioural insights in thinking about UC:

- The reform will lead to a great deal of **simplification** in the welfare system. For boundedly-rational low-income workers, it may be much easier to understand the implications of entering work or working more in terms of their net income gain. If this is seen to help make work 'pay' (making in-work benefits more salient), it could increase labour supply. On the other hand, simplicity could reduce labour supply if people fail to respond to complex, obscure incentives that come from layering multiple policies together but do respond to a clear withdrawal rate.

- Policymakers need to be wary of extrapolating estimated behavioural responses from previous benefit reforms to the UC case, since previous reforms took place in a much more complicated system and so will not include any additional response to simplification. Therefore robust **evaluation** of UC will be important, in particular to see whether there are identifiably different responses compared with previous reforms which might be attributed to simplicity or other behavioural effects.
- Labelling the benefit as both 'universal' and a 'credit' (rather than a benefit) could reduce **stigma** effects if it is seen as an entitlement that everyone has some right to receive. Together with a reduction in complexity, this could improve take-up.
- An important issue is how entitlement to **'passported benefits'**, for which people receiving some means-tested benefits qualify, will be affected by UC.[a] These include some benefits in kind – such as free school meals, prescriptions and eye tests – and some cash payments, such as Cold Weather Payment and Maternity Grant. Even if somehow wrapped up into the UC system, ending the explicit labelling of such benefits may affect spending patterns and lead to a perception that people are losing out, which could affect support for the reform and how people respond.
- The intention is to pay UC monthly, in the same way that most salaries are paid. This could help people who are not in work to start **budgeting** and mean the move to monthly income upon finding a job is not a big shock to financial management. On the other hand, if people are time inconsistent, they may find it hard to plan budgets and might lose out from larger, less frequent payments relative to smaller, more frequent payments.
- By moving to a single payment for families, UC will be paid to one partner in a couple. If this is more often the male (assuming the male is more likely to work), this might lead to an **intra-household reallocation** from women (who are more likely to receive Child Tax Credit) to men. This may affect family outcomes if parents have different 'social preferences' over their children's welfare or the family's welfare.
- Under UC, more people may be drawn into the means-tested benefits system. This may change **reference points** for some people from being 'non-recipients' to being 'recipients' of means-tested benefits. This might change attitudes towards welfare payments or redistribution in the longer term, perhaps reducing the stigma effect of being on benefits.

a. See Department for Work and Pensions (2012c) for a discussion of these issues.

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7. Tax compliance

Summary

The gap between tax revenues collected and those that were, in principle, due based on tax law was estimated at almost 8 per cent in the UK in 2009–10, around £35 billion. Lessons from behavioural economics about why people do and do not comply with tax law could be important in designing interventions to reduce the gap. Some of the insights suggest quite different interventions from those coming from the standard model of tax compliance as a 'gamble' on the part of taxpayers.

Evidence from lab and field trials of behaviourally-inspired interventions to improve compliance has shown some encouraging effects. However, there appears to be more to do to understand whether such interventions can engender genuine long-term behavioural responses and to ascertain the direction of causality between behavioural factors and compliance.

The relationship between tax complexity and tax compliance is theoretically ambiguous, and empirical evidence is mixed. More compelling evidence on whether complexity affects compliance, or whether complexity is a response to compliance, would also be helpful. If the intention is to make the process of compliance more straightforward, then pre-populated tax returns for those who use self-assessment may be one option; but again, in theory, this might reduce compliance by making it clear where tax authorities have little information. There does not appear to be empirical evidence for this issue.

The evidence for how the relationship between tax authorities and taxpayers affects compliance is also rather limited and, again, causal effects are unclear. There is evidence, though, that social factors in general affect compliance. In particular, people respond to messages that others pay their taxes on time, and this is particularly true if the information can be tailored to someone's local area, which might better reflect their relevant peer group. However, there seems to be no effect of making general moral appeals to people to pay tax; nor is it clear whether these tailored messages would affect behaviour in the long run once people become familiar with them.

If people comply because they overestimate the likelihood and consequences of detection, then trying to influence how people perceive the chance of audit (perhaps through drawing attention to high-profile cases of uncovered evasion) could be a useful policy tool. At the same time, genuinely increasing the chance of audit might be less effective than implied by standard models. A policy such as advanced payment, where people pay up front and then receive a tax refund upon calculating their true liability, could also be effective if people are unwilling to risk potential gains, though it may be hard to implement when most people pay taxes at source.

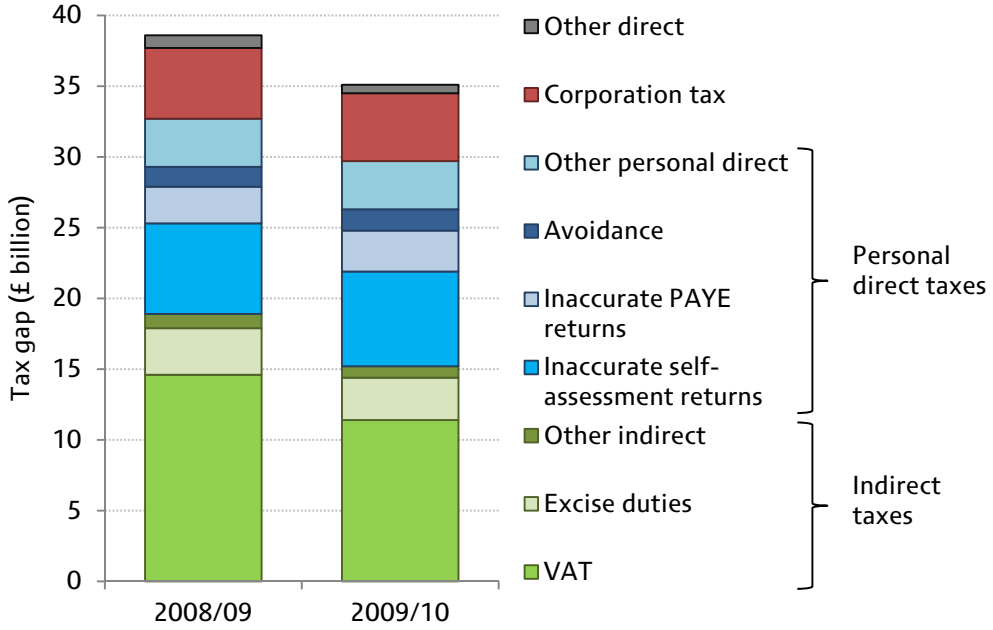
This chapter explores why people do, or do not, pay less tax than they 'should' based on the tax laws they face and looks at whether behavioural economics offers further evidence for this question.[54] The difference between revenues received and those that are expected given the tax system is known as the **tax gap**. It is explained in part by legal avoidance measures (such as channelling personal income through a company as dividends to pay the lower corporation tax rate) as well as by illegal evasion measures (such as buying illicit alcohol and tobacco on which excise duties have not been paid). Unintentional mistakes also contribute to it. In the most recent estimates, for 2009–10 (HMRC, 2011a), the UK tax gap was £35 billion, or 7.9 per cent of total tax liabilities (see Figure 7.1). Behavioural insights that could help reduce the gap ought to be of great

[54] Chapter 6 considered briefly the issue of benefit fraud and non-take-up. An excellent summary of general issues around tax administration and compliance is given in Shaw et al. (2010).

policy interest. Our focus in this chapter is on evasion and avoidance issues for personal taxes, but behavioural ideas could clearly be relevant to other aspects of the tax gap as well.

The costs of taxation include administration and enforcement costs and the costs that individuals incur in trying to avoid paying tax. In some cases, even when taxes are 'efficient' in the sense that they impose small economic distortions, these other costs may be sufficiently large that imposing the taxes becomes extremely difficult. For example, a poll tax (in which all individuals pay the same amount) is, in principle, economically efficient. But on equity and compliance grounds, a poll tax looks much less attractive: Besley et al. (1997) show rates of non-compliance for poll tax payments approaching 50 per cent in some areas of England in 1992–93.

Figure 7.1. Size of the UK 'tax gap', by type of tax



Source: Based on table 1.1 of HMRC (2011a).

Modelling non-compliance

The standard model of tax compliance is provided by Allingham and Sandmo (1972, henceforth AS). They treat compliance as a choice made under uncertainty (see Section 2.2), and so their approach is sometimes known as the 'taxpayer as gambler' model. Taxpayers can either comply with the tax system or choose to evade taxes to some extent. Evading has benefits in terms of reduced tax payments, but also has costs from the risk of being caught (perhaps following a tax audit) and having to pay a fine or face other punishment. Based on this model, a number of predictions emerge: for instance, there should be less evasion when the penalties for evasion are higher (for example, the size of the fine or the length of the prison sentence) and less evasion when the probability of being caught increases. A non-technical discussion of the model and papers that have tested these predictions is given in Slemrod (2007) and in section 6.3 of Andreoni et al. (1998).

There is an active debate in the economics literature about how well this model accounts for observed levels of non-compliance. Overall, the likelihood of being caught and the penalties for evasion are relatively low, yet compliance rates are in general high. Some studies (Alm et al., 1992; Pommerehne and Frey, 1992) have argued that, to be consistent with observed data, the 'taxpayer as gambler' model would require taxpayers to be far more risk averse than seems plausible based on empirical studies of attitudes to risk. Other papers suggest that more realistic formulations of the AS model can generate predictions closer to observed compliance data. In particular, models

that allow for the fact that more egregious evaders are more likely to face audit and that some types of taxes are more easily evaded than others generate results much closer to observed outcomes (Kleven et al., 2011; Phillips, 2011).

While this debate continues, the relative importance of behavioural factors in explaining non-compliance remains uncertain. Nonetheless, some behavioural modifications may help further explain observed patterns of evasion. Moreover, the policy implications of behavioural factors in motivating tax compliance might be quite different from those coming from the AS model. We discuss some of these issues in the rest of this chapter. Further references and non-technical discussion of the AS model, its extensions and behavioural models of non-compliance can also be found in Alm (2012).

7.1 Bounded rationality

If taxpayers are boundedly rational, then the complexity of the tax system could affect compliance. Straightforwardly, people could simply make **mistakes** in determining their tax liabilities (whether employers remitting through PAYE or taxpayers filling in a self-assessment form). HMRC (2011a) estimates that around 7 per cent of the tax gap is accounted for by error. Minimising error could therefore have real benefits.

More interesting is the case where complexity affects the incentives to evade or avoid tax, perhaps by introducing additional scope for non-compliance. For example, if different forms of income are taxed at different rates, then people may be able to shift how they are paid to reduce their tax burden. Non-compliance is also likely to rise if complexity gives the taxpayer informational advantages relative to the tax authorities. It may be hard to confirm, even via audit, that someone was paid in a particular form or was entitled to claim a particular tax deduction, say. On the other hand, complexity could give informational advantages to the authorities, who might be better placed to spot irregular tax records or when records change wildly from year to year. More subtly, complex systems might involve a greater **hassle** cost of compliance. If paying taxes is partly motivated by an intrinsic willingness to contribute to the 'public good' (see Section 5.4), making taxpaying a chore might crowd out some of this willingness to comply.

It is hard, therefore, to be confident about what the effect of complexity on compliance ought to be, suggesting empirical study is needed. Perhaps unsurprisingly, the evidence is mixed. Christie and Holzner (2006) examine compliance in European countries. Controlling for other factors, including audit rates, penalties for evasion, the level of taxes and proxies for motivations for paying taxes, they find that complexity is positively correlated with compliance for personal income taxes.[55] On the other hand, Richardson (2006) uses a larger group of countries and finds that those with more complex tax systems tend to have higher evasion. Moreover, he suggests complexity is the most important determinant of cross-country differences.

These studies take complexity as determining evasion, whereas in practice the causality may run the other way. It is possible that when tax evasion is easier (for whatever reason), governments might choose to have a more complicated tax system in response. For instance, the government might decide to have a separate lower tax rate for income that is easier to conceal. To determine

[55] Their study also finds differences by type of tax. For example, complexity has a stronger positive impact on compliance for social security taxes (for example, National Insurance contributions in the UK) than for personal income taxes. Social security taxes tend to be complicated when there is a clear separation of their function – as pension contributions, unemployment insurance mechanisms and so on – which may make taxpayers more willing to comply as they view the payments as a mutual insurance device. This might suggest a framing effect whereby there is more willingness to comply with taxes labelled for some specific purpose than to comply with general taxes, at least so long as that purpose is supported by the taxpayer.

causal relationships, it would be necessary to find factors influencing the complexity of the tax system that are not driven by concerns about tax evasion. Further research in this area would be useful.

To help simplify the process of paying taxes, 'pre-populated' tax returns are sent to small businesses in many OECD countries, including the UK (see Villaincourt (2011)). A pre-populated return is partly filled out beforehand using information already known to the tax authority from third parties. The taxpayer confirms that this information is correct, filling in any remaining gaps on the form. Pre-populating can help to reduce compliance costs and could conceivably reduce error. A disadvantage is that pre-populating reveals which sources of income are already known to the tax authorities. This might make taxpayers more confident about misreporting other sources of income, which the tax authority has shown it is less able to verify. The effect of pre-populating on compliance, compliance costs and error could be investigated using randomised experimental methods, though we know of no such studies at present.

7.2 Prospect theory

Dhami and al-Nowaihi (2007 and 2010) argue that insights from prospect theory may help the AS model of evasion better fit observed levels of non-compliance. In particular:

- Taxpayers may overestimate the probability of being audited or the size of the penalties they face. Andreoni et al. (1998) cite studies suggesting both might be true. People could behave according to the AS model but based on subjective decision probabilities rather than objective probabilities.
- Taxpayers may perceive the penalties as a loss and so react more to them than to the gains from successful non-compliance. This will lead to less evasion than the standard model predicts.

These insights have some policy implications. One way to increase compliance is to raise the probability of detection – audit more frequently, employ more tax inspectors, and so on. However, raising the objective chance of audit might narrow the gap between subjective and objective expectations, reducing the effectiveness of doing so. In an experimental setting, Alm et al. (1992) find less under-reporting of true income than predicted by the AS model when the probability of audit is very low, but more under-reporting than predicted when the probability of audit is somewhat higher.[56] A related implication is that focusing public attention on high-profile cases of uncovered tax evasion could affect subjective probabilities without actually altering objective audit frequency. The HMRC Compliance Perceptions Survey (CPS) collects information on taxpayers' perceived probabilities of being caught for regular tax evasion. In 2010, only 10 per cent said that they thought it was 'very likely' that evaders would be caught, though 36 per cent thought the likelihood of detection had increased compared with last year (HMRC, 2011b). It would be interesting to see how these perceived probabilities respond to policy initiatives, and whether there is any relationship between media reports of compliance and taxpayers' perceptions and behaviour.

Tax authorities may also be able to manipulate reference points in such a way as to reduce evasion. One suggestion (Elffers and Hessing, 1997) is the use of advanced tax payments, whereby a taxpayer prepays some obligatory sum and then either pays a top-up or receives a refund when true liability is assessed. Greater advanced payments ought to reduce evasion, as more taxpayers

[56] They note, though, that even when the probability of detection was known to be zero, there was still some reluctance to misreport income, suggesting that threat of audit alone cannot explain compliance.

would expect to receive later gains (refunds) over which they are risk averse. Cox and Plumbley (1988) find evidence in the US that compliance increases with the size of the expected refund: moving from an additional payment of $1,000 to a refund of $1,000 was associated with an increase in compliance from 89 per cent to 96 per cent amongst salaried employees. These findings were later confirmed in an experimental setting by Robben et al. (1990). While it is difficult to see how this could be feasibly implemented for those using PAYE, as is the case for the majority of UK taxpayers, it could conceivably be employed for those who use self-assessment.

7.3 Social preferences

Intrinsic motivations

One obvious reason why tax compliance may be high is that social factors influence the decision to pay. In the UK, 13 per cent of those surveyed in the CPS said that their main reason not to evade income taxes was that they thought it was unfair to other taxpayers, and for another 13 per cent it was that they thought tax evasion was immoral; 13 per cent said that the probability of detection was the main deterrent and 10 per cent cited the penalties (HMRC, 2011b). In a survey by the US Internal Revenue Service (IRS, 2012), 79 per cent of respondents said that their personal integrity had a 'great influence' on their decision to report their taxes honestly, compared with 34 per cent citing fear of an audit. Cultural factors such as religiosity have been shown to play a role in compliance (Torgler, 2006). Sandmo (2005) derives an economic model of compliance that includes a moral cost of evasion. Interestingly, his model highlights the possibility, discussed in Section 2.1, that increased fines or punishments for evasion may crowd out these intrinsic motivations for compliance.

While penalties may crowd out intrinsic motivations, it is possible that some rewards may help to crowd in motivations for honesty. Some countries offer rewards for compliance: for instance, taxpayers in the Philippines have their names put into a lottery if they comply with VAT. Torgler (2003) carried out an experiment with villagers in Costa Rica. Subjects earned money in the first part of the experiment and were asked to pay one-third as a tax. The decision to comply was anonymous, though audits and fines were possible. When compliance was rewarded with a prize, evasion was eliminated altogether (though the sample size for the experiment was small). The use of field experiments to assess rewards of this kind is discussed in Feld et al. (2006).

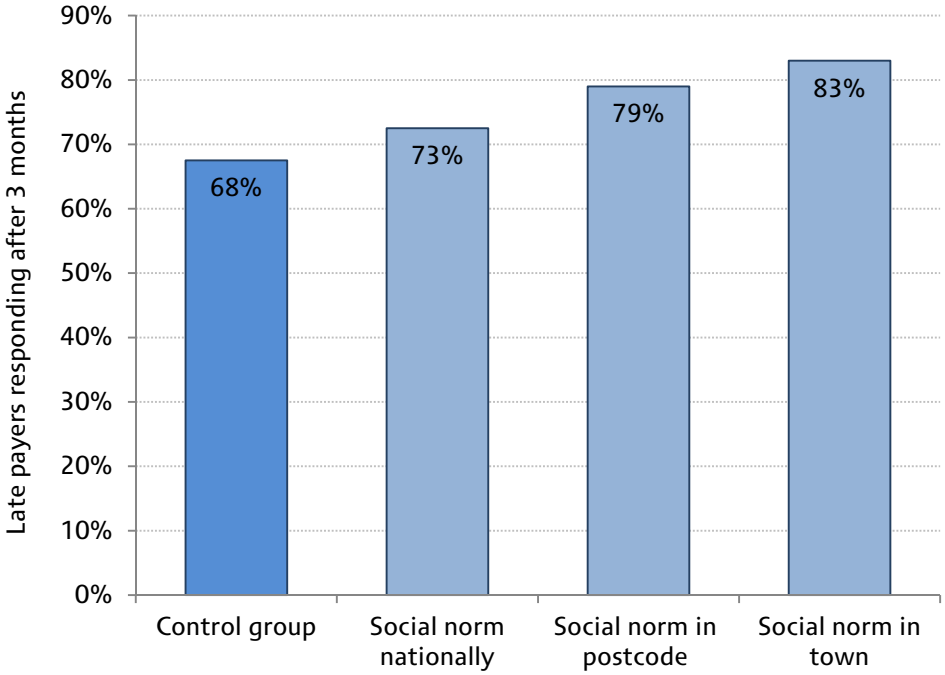
Social norms

Social preferences influence the decision to comply (or otherwise) if the behaviour of others affects individual decision-making. For example, the belief that other people pay taxes honestly might increase the moral costs of evasion or the social stigma attached to being caught (a form of non-financial punishment). This cuts both ways: if evasion is widespread, this might reduce the perceived costs of non-compliance. Trying to alter the norm or perceptions of the norm might be an effective policy to increase compliance. In a lab experiment, Wenzel (2005) asked 64 students a series of questions about their own views on the acceptability of tax evasion and what views they expected others to hold. Most students felt that evasion was unacceptable, but tended to think others would view it as more acceptable than they actually did. Those told of the discord between what they thought others would say and what they actually said were significantly less likely to admit to cheating on their tax return. A related field experiment involved 1,500 taxpayers in Australia. Those given feedback on social norms were less likely to claim a range of tax deductions.

A recent UK study by HMRC and the Behavioural Insights Team (Cabinet Office, 2012) also suggests that informing people about what others do has substantial effects on compliance. In one study,

different letters were randomly sent to individuals calling on them to pay any tax debts. Those involved in the experiment would receive either a standard control letter or one of several treatment letters. All the treatments informed the taxpayer that '9 out of 10 people in Britain pay their tax on time', but some variants included additional information on compliance rates in the recipient's local area, defined as their postcode or town. The most effective included compliance in the town, which increased the proportion paying the debt within three months by 15 per cent compared with the control group (see Figure 7.2).

Figure 7.2. Effect of referring to social norms in letters to late taxpayers



Source: Cabinet Office, 2012.

On the other hand, some studies have found social norms to be less effective. In a lab experiment, Blumenthal et al. (2001) find that letters sent to taxpayers in Minnesota including the message 'people who file tax returns report correctly and pay voluntarily 93 percent of the income taxes they owe' had no significant effect on compliance. Compared with the Cabinet Office study, the Minnesota experiment gave information about the proportion of *income tax* that is paid rather than the proportion of *taxpayers* who report truthfully. Thus the message that is given clearly matters.

An interesting, unexplored question in the use of social norms to encourage tax compliance is whether repeated appeals to norms might in the end wear off: are any benefits essentially one-off, and would taxpayers eventually revert to their previous behaviour even if they received the information again and again?

Moral suasion

Rather than informing taxpayers about social norms of compliance, an alternative policy approach based on social preferences might be to appeal directly to moralistic reasons to comply. Such techniques, though, have been tested in various field studies and seem to have been less effective. Hasseldine (2005) finds that amongst self-employed people sent a letter reminding them that unpaid taxes meant that less was available for public spending, 59 per cent reported an increase in turnover over the course of a year, compared with 55 per cent in a control group. This effect was statistically significant, but the policy was less effective than treatments that threatened an

increased probability of audit or a penalty for non-compliance. In the Minnesota study discussed above, a separate group of taxpayers were sent a letter reminding them of the public services that taxes are used to finance. No effect on tax compliance was found. Torgler (2004) found similar results in Switzerland, where normative appeals had very little effect on the timeliness with which tax forms were filed and taxes paid. Torgler (2003) did find that moral suasion increased compliance, but this result was obtained in a small-scale laboratory experiment.

Tax morale

Andreoni et al. (1998) propose two further social determinants of the willingness to evade or avoid tax, which they term tax morale. Evasion and avoidance could be partly driven by:

- the extent to which the taxpayer perceives the system to be fair;
- taxpayer satisfaction with the quality of governance and public spending.

The key idea is of a reciprocal relationship between taxpayer and state: people may be more willing to comply with the tax system if they perceive it to be fair and delivering public services at good value for money. This is naturally a difficult proposition to test. In the CPS data, 5 per cent of those who thought HMRC were 'fair' said evasion was acceptable, compared with 18 per cent of those who thought the authorities were 'unfair', but the direction and nature of causality are not clear. Frey and Torgler (2007) find that measures of satisfaction with and trust in the state in European countries are positively correlated with a measure of tax morale. Alm and Torgler (2006) find a negative relationship between the size of the 'shadow economy' and a measure of tax morale using data from the US and 15 European countries. Again, though, a causal relationship is not clearly demonstrated in these studies.

Overall, improving tax morale as a means of reducing evasion would appear to be a strategy for the longer term, and any benefits from greater compliance are likely to be secondary to more general benefits that come with improved institutions.

7.4 Conclusions

Particularly at a time of fiscal retrenchment, trying to increase tax revenues by limiting the size of the tax gap has an obvious appeal over and above increasing tax rates for those who do comply. Further empirical and theoretical assessment of the relative importance of behavioural factors in explaining compliance and the effectiveness of behaviourally-inspired interventions in this area seems important.

Behavioural insights do suggest some important differences in how to intervene compared with the standard 'gambler' model. Increasing the probability of audit is less effective if this leads in part to a narrowing of the gap between objective and subjective estimates of this probability. Indeed, trying to alter the perceptions of audit probabilities could be effective, as could playing on the behaviour of others to influence individual decision-making. These interventions would be less costly and so might be quite efficient ways to raise compliance, but it is not clear whether there are long-term compliance effects or whether there is, essentially, just a one-time gain which then disappears.

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8. Conclusions

The purpose of this report has been to highlight that behavioural economics has implications for policy design that stretch far beyond the use of nudges alone. While our discussion in Chapters 4 to 7 has focused on issues related to the tax and benefits system, policymakers should, of course, be aware that good tax policy is not made in isolation from other policy instruments. Non-tax policies such as regulation and education could (indeed, should) be informed by insights from behavioural economics as well, and nudges are a new type of policy directly inspired by the emerging behavioural literature. Just as the recent Mirrlees Review (Mirrlees et al., 2011) highlighted the importance of not focusing on individual components of tax policy, taxes themselves fit in as part of an overall strategy to encourage behaviour change and redistribute resources. Other policy weapons will have a direct bearing on taxes. For example, providing comparative information about energy use on household bills might increase the salience of energy prices and generate a social preference for reduced energy use; both effects might help reduce energy consumption and reduce the optimal carbon tax on domestic energy use.

The conclusions to Chapters 4 to 7 summarise our thoughts on behavioural insights for different aspects of tax policy. Rather than reiterate them here, we make two broader points by way of conclusion.

First, whatever insights from behavioural economics are incorporated into the design of policies, the most effective way to understand whether the policy had the desired impact is to conduct rigorous policy impact evaluations. This might involve the initial use of pilot programmes or small-scale field experiments where both the intended and unintended consequences of policies are tracked over time in groups that are randomly assigned to be 'treated', and so subject to the policy, and among other people who are randomly assigned to a control group.

Alternatively, where such randomisation is not possible, a host of econometric techniques now exist to evaluate policies under alternative underlying assumptions about individual behaviour. An inability to use trials is not an excuse for policy inaction: other approaches allow us to estimate the importance of different assumptions about how people behave and make choices for outcomes and welfare. However, such techniques rely on good data being collected and made available for research. This is not limited just to data collected from policy experiments, but also includes large-scale government surveys that measure the behaviour and characteristics of thousands of households.

Policy evaluation provides a beneficial feedback loop into government decision-making and helps refine policies over time. The ability to do this will depend on the relevant outcomes being measured, with sufficiently large-scale pilots and experiments being implemented so that possible heterogeneous policy impacts can be drawn out and the longer-term impacts disentangled from immediate policy responses. Over time, by building a body of knowledge, it becomes easier to identify what might be generalisable – so that insights from one policy sphere can be successfully applied or anticipated in other policy spheres. This will be aided by the combined use of field experiments and the estimation of structural models to simulate what individual responses would have been to alternative policies, not just those policies actually implemented. We can also draw on evidence from other countries, so long as we are mindful of any reasons why the results may not translate across national borders.

Our discussion of tax policy in Chapters 4 to 7 of this report has, as far as possible, drawn on the evidence base for whether and how behavioural factors are relevant for tax and benefit policy. What is quite striking is that there is little UK-specific evidence of these issues, and that only rarely

were we able to make any assessment of how significant failing to take account of behavioural biases would be in terms of making good policy. These are important issues for future research to address more carefully.

Our second broad concluding point is that, throughout, we have emphasised the policy implications of individuals being subject to various behavioural biases. It is worth highlighting an expanding set of research that explores whether policymakers themselves, or groups of decision-makers such as firms, might themselves be subject to behavioural biases also. As discussed earlier, Armstrong and Huck (2010) note that assuming that firms are pure profit-maximisers who will choose to exploit biased, naive consumers if profitable to do so ignores the probability that behavioural factors influence firm decision-making as well. Firms may seek to 'satisfice' their profit level, they may use subjective, over-optimistic probabilities in looking at expected outcomes under uncertainty, and so on. A recent contribution of Bénabou (2011) develops a model of how groups can be subject to wishful thinking and collective denial – so that individual biases are not mediated by group decision-making. Whether such processes operate in government decision-making is under-researched, but establishing insights from behavioural economics for the process of policy formation should not in general be neglected.

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