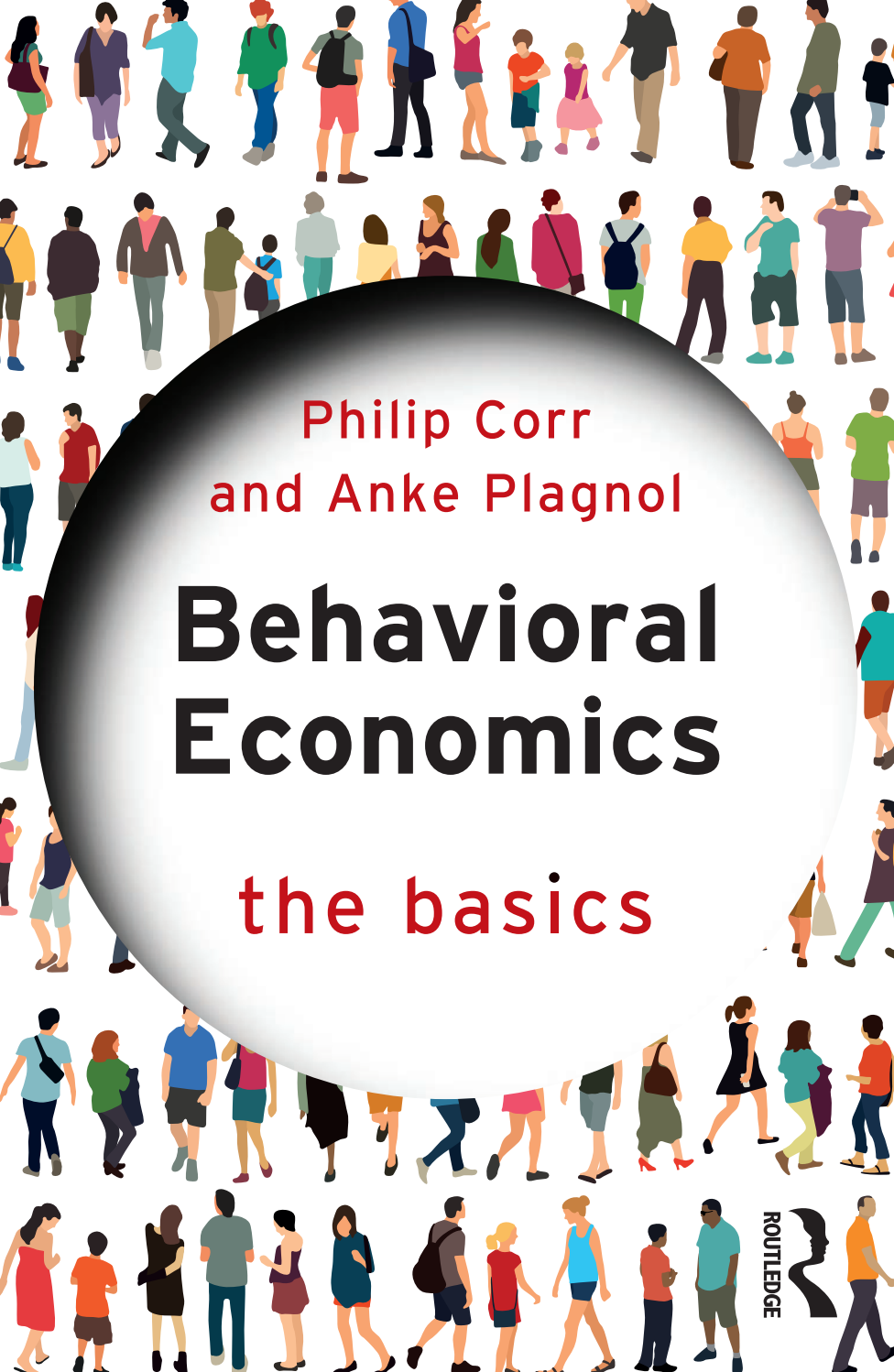




Philip Corr
and Anke Plagnol

Behavioral Economics

the basics

ROUTLEDGE



‘There are now several books about introductions to behavioral economics. These books tend to put the reader right into the theories and experimental evidence of behavioral economics. The topics include behavioral consumer and producer theory, behavioral macro, and behavioral finance. What makes the Corr and Plagnol text unique is that it covers the economic and psychological theories and evidence of behavioral economics but appeals to a wider audience. It does so by putting the theories and evidence of behavioral economics in the context of the history of economic theory, and ideas from social psychology, and business advertising. It addresses the question of what were the shortcomings of orthodox economic theory which gave rise to behavioral economics. Comparisons between ECONS and HUMANS are in many chapters.’

– **Roger Frantz**, *Professor Emeritus, Dept Economics,
San Diego State University, US, and; Lecturer, Dept of Psychology,
San Diego State University, US.*

Roger Frantz is Editor of the *Journal of Behavioral Economics for Policy*, and Editor of the Routledge Advances in Behavioral Economics and Finance series.



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BEHAVIORAL ECONOMICS

THE BASICS

Behavioral economics is everywhere – whether used by governments to shape our judgement and decision making, advertisers and marketers to sell products, or even politicians to sell policies, its insights are important and far-reaching.

Behavioral Economics: The Basics is the first book to provide a rigorous yet accessible overview of the growing field that attempts to uncover the psychological processes which mediate all the economic judgements and decisions we make. In seven chapters, the book answers questions like:

- What is behavioral economics?
- How does it help us to understand economic behavior?
- What does it tell us about how people form judgements and make decisions in their private and public lives?
- What does it tell us about the psychological nature of financial catastrophes that afflict our economic system?

With recommended further readings throughout, *Behavioral Economics: The Basics* is essential for all students taking courses in behavioral economics, economic psychology, consumer psychology, microeconomics and game theory, and also for professionals looking for an accessible introduction to the topic.

Further online resources may be found at www.behavioraleconomicsbasics.net

Philip Corr is Professor of Psychology at City, University of London, where he specializes in behavioral economics. Reflecting his broader personality neuroscience focus, he is most interested in how individual differences in fundamental systems of motivation and emotion relate to economic behavior.

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BEHAVIORAL ECONOMICS

THE BASICS

Philip Corr and Anke Plagnol

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CONTENTS

Preface	ix
1 What is behavioral economics and why is it important?	1
2 The ascent and dissent of economics	29
3 ECON: <i>homo economicus</i>	59
4 HUMAN: more Homer (Simpson) than <i>homo economicus</i>	89
5 Manners, monkeys and moods	119
6 Nudge: whys, ways and weasels	149
7 Sell! Behavioral science of the commercial (and political) world of persuasion	179
Glossary	213
References	229
Index	243



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PREFACE

Behavioral economics is a relatively new and exciting branch of the social sciences with considerable real-world applications. It is important; but it can be complex and, even, confusing. In recognition of this fact, this book aims to provide an introduction to the basic issues that define the field, including theoretical, historical and practical aspects. We show that although behavioral economics may well be seen as a new branch of the social sciences its roots go very deep in economic theory and history – all the way back to the first economist in the modern sense, Adam Smith. In fact, behavioral economics is the modern form of much older traditions and the most recent manifestation of long-standing dissatisfaction with mainstream economic viewpoints.

In planning this book, we decided to do something different to other books on behavioral economics. Our book is aimed at the interested reader who wants to get a real – and academically credible – appreciation of this complex field while at the same time gaining a sense of the deeper issues of economics and psychology. It is suitable for students, as it is for the interested general reader. It should also be a good starting point for the professional who wants to apply behavioral economics to their own field: as we show, the applications are numerous and highly significant.

Although our book is concerned with basics, it is not basic in content and discussion. We aim to provide readers with a sufficiently detailed, yet accessible, introduction to the whole field of behavioral economics – this is no easy feat to achieve – and we attempt to do this in a lively fashion to stimulate, perhaps even to provoke. Still, the reader has the right to ask: how does this book differ from others in this field?

First, most behavioral economics books aimed at students are rich in mathematics and technical terms, and are largely inaccessible to the non-economist; ours is not. Second, our book differs from the more popular ones in being more systematic in the presentation of material – in particular, we include a discussion of the history of economics (and some moral philosophy and politics) to let the reader achieve a better grasp of the larger intellectual landscape. We present the ‘big picture’ with the intention of giving a bird’s eye view of the entire subject. We especially avoid mathematics, and we do our best to explain the technical terms which must be included if we are to do anything approaching justice to the field. Students who wish to consult the primary sources of the many studies that are summarized in this book can refer to the bibliography at the end of the book. Most of the classic theories and concepts mentioned – including utility functions and opportunity costs (economics), social influence and priming (psychology) – are covered in textbooks such as *Microeconomics and Behaviour* by Robert Frank and Edward Cartwright, or *An Introduction to Social Psychology* by Hewstone, Stroebe and Jonas. We refer the interested reader who wishes to gain a deeper or more technical understanding of these concepts to these sources. Students of economics and psychology might already be familiar with these concepts as they are taught as part of the typical undergraduate curriculum, and we therefore focus on behavioral economics references in the bibliography.

As an economist (Anke Plagnol) and psychologist (Philip Corr) we have tried to present both sides of behavioral economics; it is at the intersection of these fields where behavioral economics was born, and it is where the creative synergies are found. Further online resources may be found at www.behavioraleconomicsbasics.net

WHAT IS BEHAVIORAL ECONOMICS AND WHY IS IT IMPORTANT?

INTRODUCTION

What is this thing called ‘behavioral economics’ and why has it set alight the worlds of business, finance and government? Why should *you* want to know about it? What does it tell us about how people form judgements and make decisions in their private and public lives? How does it help us all to understand the limitations and foibles of economic behavior? And what does it tell us about the psychological nature of financial catastrophes that afflict our economic system (e.g., the stock market crash of 1929 and the global financial collapse of 2007/2008)? What are the implications for mainstream economics? By the end of this book, you will have answers to these and many more questions; and, also, you should have your own questions to ask about the world of economics as well as your own behavioral insights to answer them.

In this introductory chapter, we see why there is a need for behavioral economics. We will understand why two pioneers received the Nobel Memorial Prize in Economic Sciences for their contributions – Daniel Kahneman in 2002, even though he is a psychologist, and, more recently, Richard Thaler in 2017, who hails from economics.

In contrast to the presumptions of mainstream economics (which we will discuss in detail in Chapter 3), also seen is just how and why we *misbehave* in everyday life. We learn how judgement and decision making affecting all areas of life are made by flesh-and-blood human beings, and how apparent misbehavior may not be so irrational after all. Once we have this foundational knowledge under our belts, we will be in a better position to put to work what we know. For example, we will find out what behavioral economics has to say about the design of effective public policy interventions (which we survey in Chapter 6). This is seen in the work of The Behavioural Insights Team (also known as the ‘Nudge Unit’) which informs UK government public policy intervention, and has been recognized by the US government – as the former US President, Barack Obama, said in 2015:

A growing body of evidence demonstrates that behavioral science insights – research findings from fields such as behavioral economics and psychology about how people make decisions and act on them – can be used to design government policies to better serve the American people

(Obama, 2015)

We will see how the applications of behavioral insights have informed the commercial, and even political, world (surveyed in Chapter 7). These have an important impact upon our daily life – few of us are left untouched by them. Although in the past there was much reliance on folklore and faddish psychological speculation, commercial applications are increasingly turning to hard scientific evidence in an attempt to influence us, often in ways of which we are totally unaware. Importantly, we will see that behavioral economics *really* is about the world in which we live and not an Ivory Tower academic discipline accessible only to the initiated few and intellectually nerdy. In this way, knowledge of behavioral economics is a liberating force by putting back some of the power in the hands of people. In consequence, we might be better able to defend against the darker applications of this new psychological technology.

Although this is a ‘Basics’ book, intended for the newcomer to behavioral economics, it is not a watered-down account of the subject – it is intended to be a clear and informative account, even a lively one. Although the reader will need to delve deeper into the subject to learn more of the details, the content of this book is sufficiently detailed to provide a good overview of the foundational knowledge that defines the entire field – of course, it cannot be exhaustive, but it needs to be adequate. In particular, we believe, it should provide a good ‘feel’ for the subject, which must include discussion of contentious issues: we have not shied away from them.

WHAT IS BEHAVIORAL ECONOMICS?

Let us get straight down to business. At its most general level, behavioral economics uses insights from the social sciences (e.g., sociology) in general, and psychology in particular, to inform economic thinking and theorizing. It takes knowledge from judgement and decision-making research to inform *realistic* assumptions about how people think, feel and act – social psychology plays a large part too. It makes predictions that can be tested, either in the laboratory (where controlled studies with experimental manipulations are possible) or in the field (where either observational or experimental studies are conducted). ‘Field experiments’ are popular where experimental research is conducted in a real-life context; for example, researchers may observe farming communities to examine the factors underlying cooperative behavior. Increasingly, behavioral economics research is incorporating knowledge gained from neuroscience – the direct study of the brain in relation to psychological processes. In these ways, behavioral economics shares much in common with ‘experimental economics’, which also uses empirical (e.g., experimental) methods to test theories, but not necessarily ones that contain ‘behavioral’ aspects derived from psychology and related academic disciplines. A more cynical view is that behavioral economics is just repackaged psychology couched in terms to be amenable to economists and to impress those in business and government who hold economics, but not psychology, in high regard – there is some truth in this claim!

We might argue about the best label or terminology for this relatively new field, but its main aim is clear: behavioral economics strives to provide a scientific account of real economic behavior. It develops theories, generates hypotheses, makes predictions, and tests them against the world of actual decision making. It is less reliant than mainstream economics on a small number of foundational assumptions/axioms upon which theories and their predictions are based. To achieve its scientific aims, behavioral economics uses the latest knowledge from the social sciences. It is not static and is continually in development. As such, it is something of a moving target and, therefore, neither easy to define nor understand.

In addition, there is something else we need to know. Behavioral economics reflects the work of psychologists as well as economists. This poses something of a problem when we talk about behavioral *economics* because often we are talking about the extension of psychological ideas – many mainstream economists claim that such ideas have little to do with ‘real’ economics. Nonetheless, psychologists have made major contributions to economics. And it is not only psychologists who are upsetting the apple cart of mainstream economics. Many behavioral economists come from mainstream economics background (e.g., George Loewenstein and Richard Thaler) and they are far from satisfied with the standard assumptions and models – they apply insights from behavioral science to *improve* economics on its own terms. As we shall see, some behavioral economists (e.g., Dan Ariely) are psychologists who are less wedded to the belief that central economics principles need to be retained, if only to be improved.

Whatever our perspective, behavioral economics was wrought into existence by the increasing weight of evidence of strange observations, anomalies and odd facts that the mainstream economic approach struggled to explain – or even comprehend. These aberrant observations – *mis*behaviors – can be seen in the everyday observation of people, and if we care to look closely enough, in ourselves. They show that we often do not follow through with our best intentions. New Year’s resolutions are one annual example – they are now something of a ritualized illustration of the failure of willpower.

And even when we appear to have a definite preference for something (e.g., saving for retirement), we do not always act in a way that maximizes the desired outcome. We procrastinate, misjudge probabilities (e.g., think we may not live to enjoy the benefits), and fall prey to a number of biases that illustrate our inability to conform to the image of the idealized rational economic agent (defined in Chapter 3). We often live for today – so often it seems that ‘tomorrow’s another day’. Sometimes we just seem to do things all wrong – and, importantly, systematically so. Now, none of this is especially newsworthy, but it does perplex mainstream economists and strains the credibility of standard economic models.

Getting a proper grasp on behavioral economics is not helped by the fact that there is not one official account of it, nor even one that the majority of behavioral economists would readily accept. *Our* account is only one possible version. In its defense, it does contain most of the elements that make up other accounts. In any event, one of the best summaries of the history of behavioral economics is provided by Colin Camerer and George Loewenstein (2003), who are two of the leading lights and advocates in behavioral economics. In their paper, ‘Behavioral Economics: Past, Present, Future’, they trace the problems encountered by mainstream economics and the solutions that come from more psychologically realistic thinking.

On closer scrutiny, what is especially interesting is that many of the ideas that fall under the rubric ‘behavioral economics’ are themselves old, but too often they have been forgotten. Our account tries to uncover these deeper roots and for this reason Chapter 2 spends some time on the history of economics and long-standing criticism of the mainstream approach – we appreciate that some people may think this unnecessary, but we do not. What behavioral economics has achieved is to give scientific and professional respectability to these criticisms. More importantly, it offers alternative accounts of a wider range of behaviors, including those that are prone to baffle the mainstream economist who expects people to behave in a consistent, rational and optimizing fashion – notions that we explore as we travel through the pages of this book.

ECON OR HUMAN?

But for now, to begin to understand the different conceptions of mainstream and behavioral economics, it is convenient to contrast the depictions of ECON (or *homo economicus*) and HUMAN (or *homo psychologicus*) (see text box). Both are concerned with the fundamental problem in economics: how to allocate scarce resources to maximize some benefit (called ‘utility’ in economics). This can be of *anything* in life, for example, where to live, who to marry or where to invest.

ECON AND HUMAN

These are depictions – some would say caricatures – of the two types of mind thought to be important in behavioral economics. Mainstream economics emphasizes ECON (*homo economicus*): the cold, rational, calculating self-interested; psychology focuses on HUMAN (*homo psychologicus*): the flesh-and-blood being who is limited in processing capacity and prone to a number of biases, errors and influences, and who is emotionally warm, and sometimes hot, in how s/he makes decisions. HUMAN is more Homer Simpson than Mr Spook-like *homo economicus*.

Behavioral economics is about how people *actually* behave (this is called ‘descriptive’ or ‘positive’ economics). That is, it is about flesh-and-blood humans who often do not seem to know what they want or how to get things done in the most logical way. The other, more mainstream, economics perspective focuses on how people *should* behave (called ‘normative’ economics). These economic agents conform to something approximating a perfectly rational model – the fact that few people are perfect need not concern us, so long as we assume that they aspire to this state and try to achieve it to the best of their (often limited) ability. In its purest form, ECON makes rational decisions that conform to logic, is self-interested, and finely weighs costs against benefits in order to maximize benefit. Unlike the wayward HUMAN, ECON is analytical, intelligent,

disinterested and not influenced by states of the body, mood, emotion and the like. According to some behavioral economists' way of thinking, ECON is little more than a figment of mainstream economics – and a theoretically misleading one at that, even possibly a dangerous one (e.g., as seen in the 2007–2008 financial crash). As Richard Thaler stated in an interview: “I believe that for the last 50 or 60 years, economists have devoted themselves to studying fictional creatures . . . They may as well be studying unicorns.” (as quoted in *The Psychologist*, 2017).

At this point, you may well ask: if we know that humans are not really like ECON then why does this concept still have such a strong foothold in mainstream economics? This is a good question, but it is easier to ask than answer. One possible reason is that science often works by holding simplifying assumptions: reducing the complexity of the *manifest* world by creating constructs of a more abstract and *latent* (i.e., hidden) nature. If this set of constructs can be used to understand the complex world, then something important has been achieved. This scientific model can then be used to predict (‘forecast’) new phenomena in other contexts. But there is perhaps another, more HUMAN, reason.

During the twentieth century, mainstream economics increasingly adopted a mathematically-inspired conception of the world. In this, certain assumptions had to be made in order for the equations to be *tractable* – that is, elegant and workable. This permitted formal theorizing expressed with the machinery of mathematics. Mathematical notation charmed and impressed the profession, and intimidated those who challenged its tenets and world view. Such mathematics is the way economic theory is conceptualized and constructed – it is how economists *think* about economic problems. Mathematical prowess is also something of a badge of respectability in the economics profession and serves an important career-enhancing function.

Well, knowing this, the big question remains: does ECON exist *in some form*? Does the idealized depiction of the rational economic agent predict the way things work in the *real* world? If ECON does exist – and we should be careful not to dismiss it too readily – then there really would be little need for *behavioral* economics: it could

be assigned to the conscientious study of psychological trivia with no real-world applications. To the extent that mainstream economics accepts the existence of HUMAN, it assumes that it aspires to being an ECON in all important respects, *especially* when the stakes are high and important decisions are being made. It must also assume that HUMAN manages a good enough approximation to ECON to make mainstream economic models work.

But, if ECON does not exist in a pure form then at what stage does it segue into HUMAN? Some behavioral economists – from both a psychology (e.g., Daniel Kahneman) and economics (e.g., George Loewenstein) background – believe that the ECON model is simply unrealistic, containing an imaginary fictional creature only to be found between the dust covers of an economics textbook where typical forms of HUMAN thinking, feeling and behaving are largely ignored; and, when not ignored, disparaged as ‘irrational’.

Although caricatures, these depictions highlight the salient features of each approach. But we need to be warned that the HUMAN/ECON distinction is prone to lead to a certain level of confusion. For example, it encourages binary thinking: ECON *or* HUMAN. This may conceal the similarities between them. It is possible that people move between these two different modes, and these simple depictions do not do justice to the true variety of behavior. In addition, the HUMAN depiction is more concerned with descriptive and positive aspects: not what *ought to be*, but what *is* – as first expressed by David Hume (1711–1776) who formulated the idea that “you cannot deduce ought from is” in his most important work *A Treatise of Human Nature* (1738). Hume meant that what we *choose* to do with knowledge is different from the ways things are – think of cancer (‘is’) and what we ‘ought’ to do about it (i.e., oppose and destroy it, not support it because it follows a natural law of cell proliferation). One of the problems of understanding behavioral economics is to keep these two perspectives in mind at the same time because both have their own merit.

In fact, it is a little too easy to be critical of the assumptions of mainstream economics and to get carried away with all the excitement and the weird-and-wonderful things to be found in

the world of behavioral economics. In this book, we do our best to eschew this temptation. We attempt to show that not all apparent examples of ‘misbehaving’ are opposed to the ECON model: on closer inspection, they may well be more rational than they might appear.

MISBEHAVING

We really do not have to look too far for examples of how in everyday life people *seem* to deviate from the cherished assumptions of mainstream economics (rationality, logical decision making and so on – these are defined in Chapter 3). Whether these misbehaviors are ‘noise’ in an otherwise rational/logical system and everything turns out ECON in the end is an open question. In any event, some behavioral economists think such deviations are normal – the stuff of everyday life, *even when making important decisions*. For example, Richard Thaler, in his 2015 book of the same name, believes that behavioral economics is all about *misbehaving* – an expression we have employed above – by which he means how HUMAN economic agents deviate from ECON model predictions: “I mean that their behavior was inconsistent with the idealized model of behavior that is at the heart of what we call economic theory.” Trained in economics, Thaler spent much of his early career cataloguing such misbehaviors, what he calls ‘supposedly irrelevant factors’ (SIFs), which turn out to be very relevant in practice.

As Thaler (2015) says: “For four decades, since my time as a graduate student, I have always been preoccupied by these kinds of stories about the myriad ways in which people depart from the fictional creatures that populate economic models.” He lists many forms of misbehaving in his lively book, which recounts his journey from ignored economist (who seemed interested only in the trivia of behavior) to professional respectability as 2015 President of the American Economic Association and 2017 Nobel Prize winner – he characterizes his early days as responding to “one-line putdowns” from economists who “had their own way of doing things”.

As we might readily guess, the fact that we so often misbehave should not come as much of a surprise. Consider one of the central

assumptions of economic theory. People make choices by *optimizing*; that is, they are said to make the best choices, based on what is available and what they can afford (choices are subject to their *budget constraints* – to you and I, what we can afford). This is fair enough. But, as Thaler notes in his 2015 book: “There is, however, a problem: the premises on which economic theory rests are flawed. First, optimization problems that ordinary people confront are often too hard for them to solve, or even come close to solving.” Thaler goes on to say: “Second, the beliefs upon which people make their choices are not unbiased. Overconfidence may not be in the economists’ dictionary, but it is a well-established feature of human nature, and there are countless other biases that have been documented by psychologists.” Thaler then notes an additional issue that reflects the complexity of actual economic life: “Third, there are many factors that the optimization model leaves out . . . there is a long list of things that are supposedly irrelevant.” Thaler gives many examples of misbehaving and the influence of SIFs.

Let us consider one SIF: a student essay marked out of a total 100 or 137 marks. Thaler found that his students would often grumble if they received a 72 (out of 100 possible marks), but they would be quite content to receive 96 (out of a possible 137) – these were economics students who are otherwise thought to be rational. Which mark would you prefer? In the second case, students are getting 70%, which is lower than the 72% in the first case. There are several biases here: 96 is *bigger* than 72; it is easy to see that $72/100$ is 72%, but what about $96/137$? Many of us would need a calculator. You can probably think of other things going on too. From a strictly rational point of view, this is all nonsense – *misbehaving* – as 72% is always better than 70% but it is not the way students see things. In an important way, behavioral economics is characterized by taking seriously these SIFs, factors that should not matter, but actually do – this can be *very* annoying because it makes the world of mainstream economics, which contains simple assumptions and elegant mathematical models, very messy. Whether the payoff in terms of realistic theorizing and prediction is a price worth paying for disrupting this internally consistent world view of economics is a moot point: behavioral economics thinks it is.

SUPPOSEDLY IRRELEVANT FACTORS (SIFS): SAVING £10

Suppose David is shopping for a clock radio. He finds a model he likes and his search has uncovered that it is available for £45 in a local shop. As David is about to buy it, the sales assistant lets slip that that same clock radio can be bought at their new store, a ten-minute drive away, for a special offer price of £35 (we assume the cost of the additional travel is minor). Do you think David will drive to the new store for this bargain? Would you?

On another occasion, David is shopping for a flat-screen TV and has found one at a good price of £495, at the same local store. As luck would have it, when he is about to buy it, the sales assistant once again lets slip that he can buy the same TV for £485 at another of their newly opened stores which is also a ten-minute drive away. What does David do in this case, and is it different to his decision with the clock radio?

When posed with these choices, many people say they would drive to the new store to save £10 on the clock radio, but they would not drive there to save the same amount of money on the TV. From a mainstream economic perspective, this is indeed strange behavior because an identical (absolute) saving is made in both cases: £10. What seems to be influencing these different decisions is the percentage of the total price that can be saved by driving to the other store – but this is a SIF and it should not influence David's buying decision. (Tversky and Kahneman asked their participants similar questions about calculators in 1981.)

Throughout this book, we see many examples of well-established *misbehaviors* which characterize how typical humans come to judgments and make decisions. In the text box, we see one well-known puzzle that has most people scratching their heads – and then kicking themselves for being so silly when they learn of the right solution.

Thaler goes on to make a good point about how we should interpret the foibles of everyday human judgement and decision making: “It has never been my point to say that there is something wrong with people; we are all just human beings – homo sapiens.

MISBEHAVING: BAT AND BALL PROBLEM

Think about this seemingly simple calculation. “A bat and a ball cost £1.10 in total. The bat costs £1.00 more than the ball. How much does the ball cost?” What is your answer? Most people are confident that the ball must cost 10 pence. This feels like the right answer, but it is not. Think about it this way. If the ball costs 10 pence and the bat costs £1.00 more than the ball, then the bat would cost £1.10 giving a total of £1.20. The correct answer is that the ball costs 5 pence and the bat costs – at a pound more – £1.05 giving a total of £1.10. This is an example of how we typically replace a difficult problem with a simpler one. One explanation of this puzzle is that we seem to non-consciously substitute the ‘more than’ statement in the problem (i.e., the bat costs £1.00 *more than* the ball) with an absolute statement (the bat costs £1.00). (This puzzle can be found in Kahneman, 2011, and other sources.)

Rather, the problem is with the model used by economists.” This statement comes from an economist steeped in mainstream economic thinking who has reached the top of his profession and who is regularly consulted by national governments (e.g., the UK government ‘Nudge Unit’). The abstract ECON, which is at the core of mainstream economic models, is apparently a very poor substitute for real HUMANS.

BEHAVIORAL ECONOMICS: SUPPLANT OR SUPPLEMENT?

At this point in our discussion it is appropriate to enquire about the ultimate aim of behavioral economics. One view is that it is a natural development of mainstream economics which it merely aims to improve. As Camerer and Loewenstein (2003) state: “Behavioral economics increases the explanatory power of economics by providing it with more realistic psychological foundations.” They also state that their belief in the power of realistic psychological models “does not imply a wholesale rejection of the neoclassical approach . . .”

(In the following chapters, we will discuss ‘neoclassical’ economics, which for the time being we are calling ‘mainstream’ economics.)

However, other notable behavioral economists are less optimistic in this respect. For example, Dan Ariely in his highly popular 2008 book, *Predictably Irrational*, says in relation to trying to convince mainstream economists of the importance of what he calls ‘irrational’ behavior:

Of course, I ran into the biggest difficulties when arguing for irrationality with card-carrying rational economists, whose disregard of my experimental data was almost as intense as their nearly religious belief in rationality (if Adam Smith’s ‘invisible hand’ doesn’t sound like God, I don’t know what does).

(Adam Smith’s ideas are discussed in Chapter 2.) As Ariely was not trained in economics – he is a psychologist and behavioral scientist – along with people like Daniel Kahneman, he is less sympathetic to the general aims of mainstream economics than those coming from this intellectual tradition. Ariely further says:

I have been acutely aware that humans engage in actions and make decisions that are often divorced from rationality, and sometimes very far from ideal. Over the years I’ve tried to understand the silly, dumb, amusing, and sometimes dangerous mistakes we all make, in the hope that by understanding our irrational quirks, we can retrain ourselves to make better decisions.

It would be fair to say that mainstream economists have not taken these criticisms entirely with a sense of equanimity. They retort that findings from (artificial and contrived) laboratory studies, often based on small samples of psychology students, may not generalize to the real, competitive world (the ‘market’) where participants are truly incentivized and motivated to behave as rationally as possible. Surely, they say, people would be fools not to behave as rationally, and self-optimizing, as possible, *especially when it really matters*? The assumption is that, when truly put to the test, HUMAN quickly becomes ECON: people behave rationally when motivated to do so

(e.g., choosing a mortgage or marriage partner). Economists of this more traditional mind-set also probably have little time for anecdotes of the kind favored by Dan Ariely and Richard Thaler about their personal observations of the foibles of others – instead, they prefer axiomatic assumptions and what they believe to be tried-and-tested principles.

Still, other, some very notable, economists are pragmatic about the whole business. As the leading economist Larry Summers, former Secretary of the US Treasury and past President of Harvard, said: “And if you are worldly and empirical, you are drawn to behavioral approaches.” (Quoted in Harvard Magazine, Lambert, 2006.)

However, mainstream economists’ belief in the inherent rationality of humans is sometimes put to the test not by small-scale, student-focused lab studies but by global events that profoundly shock economies around the world.

THE 2007–2008 GLOBAL FINANCIAL CRASH

Few events are more likely to focus the minds of economists and the general public than the loss of many billions of pounds/dollars. The 2007–2008 global financial crash marked an important turning point in the recognition and, increasing, acceptance of behavioral economics – it also reminded economists of Karl Marx’s prediction that the capitalistic system was not only prone to periodic crises but to eventual collapse due to its internal contradictions. Before this crash, few mainstream economists harbored this Marxian dread; but, after it, there was more reason to reflect upon it. The unpredictability of the 2007–2008 crash came as much as a surprise to them as to non-experts – only Marxists could take joy in their “We told you so!”

Indeed, as Thaler (2015) highlighted: “Virtually no economist saw the financial crisis of 2007–2008 coming, and worse, many thought that both the crash and its aftermath were things that simply could not happen.” One exception was Robert Shiller, who went on to win the Nobel Prize for Economic Sciences in 2013. Shiller warned in his 2000 book, *Irrational Exuberance*, that the stock market had already, by 2000, become a bubble and was bound to burst at

some point. (During the inflation of such a bubble, jumping on the speculative bandwagon is not, of course, irrational, but the trick is to know when to jump off before it bursts!) Shiller's academic work challenged the 'efficient market hypothesis' which assumes that stock market investors base stock prices on the expected future dividends, discounted to present value. Analysis of data going back to the nineteenth century convinced Shiller that this theory simply cannot explain the large variation seen in stock market prices – in other words, prices fluctuate, often wildly, for reasons other than a 'rational' valuation of companies. His subsequent work also confirmed that traders are influenced by their emotions and not a rational calculation of the market.

The policy decisions of economists, such as Alan Greenspan (Chairman of the Federal Reserve of the United States, 1987–2006), contributed to the 2007–2008 financial crash. In what must be one of the most honest admissions of all time, Greenspan said before the Congressional Committee on October 23, 2008: "Those of us who have looked to the self-interest of lending institutions to protect shareholder's equity – myself especially – are in a state of shocked disbelief." And referring to his free-market ideology, Greenspan said: "I have found a flaw. I don't know how significant or permanent it is. But I have been very distressed by that fact." Pressed by the Representative Henry Waxman, who asked Greenspan: "In other words, you found that your view of the world, your ideology, was not right, it was not working." Greenspan replied candidly: "Absolutely, precisely. You know, that's precisely the reason I was shocked, because I have been going for 40 years or more with very considerable evidence that it was working exceptionally well." (Clark & Treanor, 2008). Greenspan's disbelief in what happened seems to have been conditioned by his adherence to the philosophy of free markets and personal responsibility.

Dan Arieli (2008) recorded the views of *The New York Times* columnist David Brooks that Greenspan's Congressional confession:

... amounted to a coming-out party for behavioral economists and others who are bringing sophisticated psychology to the realm of public policy. At least these folks have plausible explanations for why

so many people could have been so gigantically wrong about the risks they were taking.

The 2007–2008 time period was, indeed, critical for the world economy and crucial for behavioral economics.

Something clearly was wrong with the mainstream economic worldview, and the 2007–2008 financial crisis was not the first of its kind (e.g., the US stock market crash of 1929, and the deep depression of the early 1930s). Alas, it is unlikely to be the last – history has a habit of making fools of those who claim “it can’t happen again”. This was seen with another notable economist, Ben Bernanke (formerly Chairman of the Central Reserve, the ‘central bank’ of the USA and chairman of President George W. Bush’s Council of Economic Advisers) who espoused the theory of ‘the Great Moderation’, which stated that traditional ‘business cycles’ are less volatile and the economic world is a more stable place (e.g., Bernanke, 2004). Like many others, this theory had good cause to be revised after 2008.

Such is the appeal – or shock – of the 2007–2008 financial crash, popular films have chronicled it, for example *Margin Call* in 2011. In 2015, *The Big Short* did a superb job of explaining how highly complex financial derivatives based on bundles of mortgages obscured the fragility of the market, especially as many of the mortgages were high risk sub-prime – Richard Thaler has a cameo role in the film. Appropriately, the film opens with an apt (if misattributed to Mark Twain) quote: “It ain’t what you don’t know that gets you into trouble. It’s what you know for sure that just ain’t so”.

HISTORY REPEATS ITSELF

History is not (now) typically taught in university economics courses, which is to be regretted because it contains lessons for us all. Irving Fisher (1867–1947) was one of the foremost mainstream economists of his day, but history played a cruel trick on him because he is now better remembered for one of the biggest predictive failures of all time: he confidently pronounced “a permanently high plateau”

in the US stock market, but not long afterwards it suffered a major crash in 1929 and ushered in the Great Depression of the 1930s. Fisher's family (mis)fortune provided an instructive lesson of the power of reality over presumption. Rival forecaster Roger Babson wryly observed that Fisher "thinks the world is ruled by figures instead of feelings" (as quoted in Harford, 2014) – throughout this book we will see the power of feelings, emotion and the like in economic judgement, decision making and behavior.

As the above examples attest, history has no respect for reputation or status – indeed, it so often shows disdain. As an example, reflecting the collective wisdom of his economic advisors, the then UK Chancellor of the Exchequer, Gordon Brown, was fond to assert during his ten-year stint at the Treasury that the "British economy of the future must be built not on the shifting sands of boom and bust, but on the bedrock of prudent and wise economic management for the long term" (as quoted in Summers, 2008). Since 2008, we are still recovering from this 'prudent' management. We might well think that the fable of King Cunate should be in the minds of those who have a fondness for fortune telling, especially in economic matters! (J. K. Galbraith cruelly joked: economic forecasting was invented to make astrology look respectable!)

Jokes aside, critics of mainstream economics continue to point to its inability to predict and explain financial crashes – they also accuse their opponents of being in denial of the magnitude of their predictive failures. This even comes from true insiders. Mervyn King, former Governor of the Bank of England, and a foremost academic economist who has been at the heart of central government policy making for many years, makes this clear in his 2016 book, *The End of Alchemy: Banking, the Global Economy and the Future of Money*. His argument is that economic decisions always occur under conditions of, what he calls, 'radical uncertainty' – that is, ignorance about the future. This cannot be remedied by the quantification of probabilities and, as such, optimizing behavior is not possible. To deal with this uncertain state, King contends that people use 'narratives' to make sense of the world. In the felicitous phrase of J. K. Galbraith, we are much reassured by the "conventional wisdom" (i.e., strongly held beliefs that have, at best, a tenuous grounding in reality; Galbraith,

1958). King believes that mainstream economics misunderstood the world before the 2007–2008 financial crisis; and, most worryingly, it has not learnt its lessons since. King makes another good point: “History is what happened before you were born. That is why it is so hard to learn lessons from history: the mistakes were made by the previous generation.” Surely, *we* might think, we would not be as stupid as them?

As an example of the fallout from the 2007–2008 financial crash, especially regarding the perceived inadequacies of mainstream economics, some students of economics have been in revolt, demanding a change to the standard curriculum. The narrow and uncritical focus of mainstream economics is addressed in the student-led 2016 book by Earle, Moran and Ward-Perkins, *The Econocracy: The Perils of Leaving Economics to the Experts*. They note that students can (and often do) go through three years of a university economics degree course without ever been asked to write an essay, let alone a critical one of the discipline. Critics of mainstream economics have been assisted by the establishment of new professional bodies which challenge mainstream orthodoxy and encourage, what they see as, more enlightened forms of economic thinking – for example, in the UK, the *New Economics Foundation*, and in the USA, the *Institute for New Economic Thinking*.

In all of this, the major challenge faced by behavioral economics is to make economic models more psychologically realistic without sacrificing the parsimony and wide-ranging applications enjoyed by the mainstream approach. This is no small challenge – it is often more comforting to stick with the tried-and-failed than the new-and-unknown: perhaps an example of *misbehaving*!

MONEY, MONEY, MONEY

To understand mainstream and behavioral economics a little better it is worth thinking about the notion of money – it may not be a ‘notion’ when in your purse/wallet, but it is in economic theory. The pop group ABBA had a smash hit in 1976 with *Money, Money, Money*, in which they sang about money being funny; they were right – but in economics not quite in the way they meant.

As noted by Mervyn King in his 2016 book, money often seems to be the main focus of economics, and, somewhat surprisingly to the non-economist, there is no consensus as to what it is and how it is created – strange perhaps, but true! There is something else about money that we need to appreciate in relation to behavioral economics – in fact, as discussed below and elsewhere in this book, money can confuse what we mean by self-interested behavior and rationality – evidence is given throughout this book.

Mention of economics in the Fashion or Lifestyle sections of the national press is rarely seen; it is to be found in the Money, Business or Financial pages. This tells us something important, namely the central role assigned to money (it is so obvious, we rarely have cause to think about it – although we think all the time how to get and spend it). Indeed, it can seem that economics is interested in little else, but this is untrue. For a start, we may give away money in an apparently unselfish act but in return we derive *psychological* benefit (value or utility). Couching economic behavior purely in terms of money is unhelpful at best and misleading at worst – we explore this issue throughout this book. ABBA were right: money is a funny thing.

Money has a psychological dimension – it conveys meaning and inter-personal value. Mainstream economics tells us that values we attach to all things in life can be expressed in monetary form; this is reflected in the ‘willingness to pay’ concept, which is sometimes used in economic research. ‘Willingness to pay’ reflects the maximum amount of money someone is willing to give up to obtain a good or service, or to avoid a bad outcome. It can be used to evaluate outcomes that are inherently non-monetary, for example the health benefits resulting from healthcare programs. The idea that ‘goods’ and ‘bads’ can be measured in monetary terms makes it possible to compare the satisfaction, happiness, or whatever (i.e., value/utility) of one thing with another. It is for this reason that economics is so focused on money – it really is the common currency of everyday life. Therefore, money can be used as a convenient metric to measure, what often seem, intangible things vis-a-vis other goods and services we might want to ‘consume’. Behavioral economics is very much about such apparent intangibles

(e.g., cooperation and the subjective utility we get from helping other people).

What this discussion suggests is that once we move away from a strictly money-based interpretation of value or utility we enter into the social realm populated by behavioral ideas – and while this realm is not necessarily antithetical to mainstream economics, it is far more tolerant of alternative perspectives. Indeed, as we see in the next section, focus on money can seriously confuse matters, even for behavioral economists.

‘ONE DAY AT A TIME’: NEW YORK CITY TAXI DRIVERS

One of the most vivid field studies in behavioral economics focused on the working patterns of taxi drivers in New York City. Reported by Camerer, Babcock, Loewenstein and Thaler in 1997, this study found that taxi drivers (especially inexperienced ones) tended to set themselves a daily target and then stopped work once this target had been met – this occurred irrespective of the hourly earnings potential which varied day-by-day depending on weather conditions. Taxi driving is ideal for such a study because drivers decide their own working hours – typically, they hire their taxis for 12 hours per day. This study raises many issues of relevance to economics and for us is a convenient way to think about the assumptions and principles discussed throughout this book.

This field study is notable for several reasons. First, the findings contradict one major mainstream economic theory of labor supply – called the ‘life-cycle model’ (e.g., Lucas & Rapping, 1969). The ‘life-cycle’ part of the theory relates to the fact that people should allocate their labor resources (i.e., time spent working) efficiently over time (weeks, months, years and even life time); and not based on just one day at a time. Central to the model is the notion that people should work more when wages are high and consume more leisure time when its price (i.e., the foregone wage) is low. What this means is that taxi drivers should spend more time working when business is good (i.e., on rainy days) and they should take it easy on bad business days (i.e., when the sun is out and people want to

stretch their legs and are less likely to hail a taxi). As Camerer et al. (1997) put it more formally: “workers [should] intertemporally substitute labor and leisure” – that is, they should not work ‘one day at a time’ but think about how they can trade off their labor with their leisure over time. However, their study showed just the opposite. In addition, taxi drivers set loose income targets and quit working once these targets had been reached. We will see more clearly in subsequent chapters why such behavior *seems* to violate mainstream economic thinking. It clearly violates the ‘life-cycle’ assumption that our labor supply decisions should take into account how best to optimize the trade-off between work and other preferences (e.g., for leisure, social and family) over time.

By not conforming to life-cycle labor supply theory, are New York City taxi drivers *misbehaving*? Well, according to this theory, clearly they are. But what is wrong: the theory or the taxi drivers’ choices? In this case, is there *really* greater utility per hour on a rainy day than there is on a sunny day? In purely monetary terms, there is, indeed, greater utility. This question is especially pertinent when we consider that if taxi drivers had worked longer hours on a bad weather day, they could ‘sun themselves’ on days when the weather is good but the taxi business is bad: over the ‘life cycle’ of their labor supply (which they decide), they could work less and have more leisure time.

Well, should taxi drivers decide to work longer on rainy days? This question returns us to the issue of money in defining personal utility. An important point here is that utility is not just about acquiring money – indeed it can be the opposite. We may decide to give money to charity (making us financially worse off), but we thereby gain utility from the ‘warm glow’ derived from this charitable donation – we may also get further psychological utility from letting the world know of our good nature (something called ‘virtue signaling’; e.g., Bartholomew, 2015). Therefore, money and psychological utility are orthogonal (i.e., independent – knowing something about one tells us little or nothing about the other), although this is true only once a certain level of wealth is reached (we are unlikely to give to charity if it means we go hungry). In all of this it is important to know that mainstream economics does

not insist on defining utility in purely monetary terms, yet it can often seem so.

Here we come across something of importance regarding what is meant by utility (i.e., benefit/value/well-being). It could be concerned purely with money (e.g., income from taxi fares), but there are other ways to view matters. In place of pure monetary income, the taxi drivers' benefit (utility) may be defined in terms of income plus an assessment of risk and convenience (and the 'opportunity cost' – foregone pleasure – of lost time with family and friends, and so on). We need to remember that it is what the selfish rational person considers to be important *to themselves* that defines *their* utility – this need not be money – and this determines how they decide to allocate their scarce resources (e.g., time and effort). For this reason, viewing the total utility of taxi drivers purely in financial terms is inappropriate, and, surely, it would not be the way even the most hard-headed mainstream economist would conduct their own personal affairs. Broadening utility from pure income renders the judgements and decisions of taxi drivers not so irrational after all.

Putting this discussion into context shows us the reality of driving a taxi on a rainy New York street. There are several things of some psychological interest here. First, working on a bad weather day is harder work and the chances of accidents must be higher – both should be expected to reduce the broader notion of utility described above (in other words, working longer hours entails *disutility*, i.e., negative value). In addition, many drivers want a regular working day that is predictable and to disrupt this may reduce their overall quality of life (which is another way of defining utility) – they may be missing out on family, social or leisure pursuits that have a higher level of utility (we need to consider their opportunity costs; the costs/benefits of their best foregone alternative). The loss of valued time with family, friends, etc., can never be recovered.

In addition, it is important to realize that most economic models are based on the *all else being equal* assumption (which is known to economics students and Latin speakers as *ceteris paribus*). The trouble with this assumption is that things are rarely equal. In the case of

taxi drivers, it may simply not be possible for them to work longer hours on a rainy day because they may have other commitments (e.g., picking-up children from school); or, more psychologically, they may have made plans which, although they could be changed at the last minute, have their own costs attached in terms of consistency of behavior – chopping-and-changing on a daily basis is unpleasant for many people.

On a more mundane but not irrelevant note, we should expect that money-focused economists – assuming they exist – who argue that taxi drivers are not behaving rationally, have probably never driven a taxi in New York City when the weather is bad. But, looking down on the behavior of taxi drivers from an air-conditioned office in an ivory academic tower, it may well seem so – indeed, they may well be there writing an academic article for which they can expect very little utility in monetary terms and they may even have to pay to get the article published – in their own terms, it may be the economist who is the one *misbehaving*! So, we can see that, if we interpret this example differently, taxi drivers in New York City may well be maximizing their utility and behaving rationally. Indeed, the authors of this seminal study acknowledge that such alternative explanations may exist. For instance, they discuss that busy, high-wage days imply that drivers pick up more or longer fares and, thus, may quit earlier because they are tired.

Our discussion of working patterns of taxi drivers attests to the fact that mainstream economic approaches can accommodate what may seem on the face of it a gross violation of rationality. This example goes to show that we need to be careful not to fall into the trap of the Straw (wo)Man argument when pitting ECON and HUMAN models against each other – to do so would only be another example of *misbehaving*.

GROSS NATIONAL PRODUCT OR GROSS NATIONAL HAPPINESS?

As the New York City taxi driver example shows, economics is not all about money, although it can appear that governments are concerned with little else. Gross Domestic Product (GDP) is

often used to assess a nation's prosperity; it comprises the monetary value of goods and services produced in an economy. But as Robert Kennedy noted in 1968:

The Gross National Product counts air pollution and cigarette advertising, and . . . the destruction of the redwood and the loss of our natural wonder in chaotic sprawl . . . Yet [it] does not allow for the health of our children, the quality of their education, or the joy of their play . . . the beauty of our poetry or the strength of our marriages . . . it measures everything, in short, except that which makes life worthwhile.

(As quoted in nef (new economics foundation), 2009.)

The calculation of GDP in the UK now includes illegal drug sales and prostitution, which helped it to overtake France in 2014 to become the fifth largest economy in the world (e.g., Cusick, 2014). As these sources of GDP show, not all prosperity is necessarily desirable; and, there are many, more positive aspects of an economy that are not captured by GDP at all despite their effects on people's quality of life. These include unpaid work in households (e.g., care for children or elderly relatives) and voluntary work. Most economies still fail to account fully for other negative outcomes, including: how resources are distributed in a society (income inequality); the depletion of resources (often economic 'externalities', which we will discuss later in the book); and criminal activities. Some people have argued that not only is the notion of GDP incomplete but it is misaligned with what people consider to benefit society (e.g., Diener & Seligman, 2004).

Following decade-long appeals from subjective well-being researchers, governments have only fairly recently begun to consider people's *subjective well-being* in policy decisions. This encompasses individuals' *own* evaluations of their well-being. In survey research this is usually assessed with measures of happiness, life satisfaction, quality of life, and, less frequently, eudaimonic well-being, which encompasses fulfilment, self-actualization, finding meaning and purpose in life – of course, these are only possible in those who are not hungry, thirsty and under threat to life.

The then French President Nicholas Sarkozy commissioned in 2008 a 25-member group of mostly economists, led by Joseph Stiglitz, Amartya Sen (both Nobel Prize winners) and Jean-Paul Fitoussi, to consider better ways of measuring societal well-being than GDP. The result was the *Report by the Commission on the Measurement of Economic Performance and Social Progress*, which advocated the use of measures of subjective well-being for designing policies and assessing social progress, denoting a shift away from a 'production-oriented' measurement system, although as things turned out this report had little subsequent impact on the French government.

SARKOZY REPORT

The 2009 *Report by the Commission on the Measurement of Economic Performance and Social Progress*, which is also known as the Sarkozy report, identifies eight 'key dimensions' of well-being that should be considered to design and assess public policies (Stiglitz, Sen & Fitoussi, 2009, p. 14). These are mostly not captured by GDP:

- i. material living standards (income, consumption and wealth)
- ii. health
- iii. education
- iv. personal activities including work
- v. political voice and governance
- vi. social connections and relationships
- vii. environment (present and future conditions), and
- viii. insecurity, of an economic as well as a physical nature

Shortly after the publication of the Sarkozy report, the then Prime Minister, David Cameron, announced in November 2010 that the UK Office for National Statistics (ONS) would start measuring subjective well-being to help guide national policy. Around the same time, the United Nations (UN) encouraged member countries to measure and use the happiness of their citizens to guide public policies, in July 2011; and in 2013, the Organization for Economic Co-operation and Development (OECD) published guidelines to assess well-being, in which it defined subjective well-being as:

Good mental states, including all of the various evaluations, positive and negative, that people make of their lives, and the affective reactions of people to their experiences.

The OECD definition covered three elements. First, life evaluation (reflective assessment, evaluation), which is sometimes referred to as hedonic well-being. Second, affect (a person's feelings). Third, eudaimonia (a feeling of sense and purpose in life), sometimes called psychological well-being or 'flourishing'.

According to this perspective, policies that aim to increase subjective well-being in society should, therefore, target life domains in which long-term improvements in well-being can be achieved and sustained, and these might be the best candidates for the type of 'nudging' we discuss in Chapter 6. For example, policies that aim to improve health or try to enhance social ties in communities to increase social capital may be better placed to increase societal well-being in the long-run. The initiatives of several European governments to systematically collect data on and consider their citizens' subjective well-being are seen by many to be a step in the right direction.

CONCLUSIONS

In this introductory chapter, we have seen why *behavioral* economics developed and how its views on human economic judgement and decision making have become more widely accepted following the 2007–2008 global financial crisis, which came as a shock to most mainstream economists, and is still (in different ways) shocking today. We have also seen the tensions between the traditional view of ECON and the flesh-and-blood HUMAN which is prone to misbehave in all areas of life. The chapters to follow build upon these foundations.

The next chapter charts the fascinating history of economics and how it evolved over the past three hundred years. In this regard, it is important to appreciate that many of the concerns of behavioral economics have been voiced for a very long time, albeit in somewhat different tones. As we shall see, it would be a mistake to think

behavioral economics is new in terms of the kinds of problems it is addressing. What is new though is the application of psychological models to economic problems and the empirical–experimental approach it adopts – for this reason, Daniel Kahneman shared the 2002 Nobel Prize in Economic Sciences with Vernon Smith who pioneered experimental approaches to understanding economic phenomena. All of this is in contrast to earlier criticisms that had all the hallmarks of philosophical, moral and political dissent. This allowed mainstream economists to ignore and dismiss, or sideline, their critics – and they kept their students well away from the thoughts of such heretical iconoclasts. Here as elsewhere, professional tensions play a role – in this respect, even hard-headed mainstream economists are HUMAN.

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THE ASCENT AND DISSENT OF ECONOMICS

INTRODUCTION

Psychology is said to have a long past but a short history, and the same may be said of behavioral economics. Depending on one's viewpoint, behavioral economics has been around not much before the 1970s, but its subject matter goes back many hundreds of years. In fact, as we will see, modern-day behavioral economics is steeped in the past of economic thinking. Viewing behavioral economics against this larger historical backdrop is important, not only for understanding the past, but also the present – crucially, it exposes some long-standing issues that are fundamental to both mainstream and behavioral economics.

In this chapter, we see that psychological ('behavioral') assumptions are lurking in the origins of mainstream economics – as, indeed, are moral and political themes which shape the 'political economy' of the world. For good reasons, the term 'political economy' was the preferred name for economics until the adoption of a seemingly more detached, scientific approach, which occurred around the turn of the twentieth century.

But first, before we jump into the historical waters of economic thought, we need to have some basic understanding of *neoclassical*

economics – this is the mainstream approach against which behavioral economics is contrasted.

WHAT IS NEOCLASSICAL ECONOMICS?

Up until this point in the book we have made repeated reference to ‘mainstream economics’. This has been deliberate. We have avoided the term ‘neoclassical economics’ which as the name suggests is a newer version of ‘classical economics’ – the name ‘classical’ was christened by Karl Marx and, then in its revised form, ‘neoclassical’ by Thorstein Veblen in a 1900 article ‘The Preconceptions of Economic Science’. Neither theorist intended these terms to be complimentary.

Neoclassical economics is the dominant approach to economic thinking in the modern world – of course, in socialist countries (e.g., Cuba), Marxist economics rules. Neoclassical economics is seen under a variety of other labels (e.g., ‘mainstream’, ‘traditional’ or the ‘central tradition’ – in 1936 John Maynard Keynes called it ‘orthodox economics’, referring to traditionally accepted rules or beliefs, which his *General Theory* of that year so famously challenged). Neoclassical economics is not one thing but rather a general approach with a set of common assumptions and principles (see text box).

In our critique of neoclassical economics, we need to be careful to avoid the Straw (wo)Man Argument, especially concerning the claim that all human beings are perfect in all economic respects – most clearly, they are not and it would be foolish to suggest otherwise. But, for the neoclassical model to have any truth value, it must be assumed that the judgement and decision making of economic agents are *good enough*: we must be sufficiently ECON and not entirely HUMAN (these concepts are defined in Chapter 1).

Now, it is doubtful whether neoclassical economists spend much time dwelling upon such specific issues. However, the assumptions of ECON are important in neoclassical economic thinking and they are necessary for the success of mathematical models. But, there is quite a bit of wriggle room here: the assumptions of neoclassical economics are often ‘relaxed’ (e.g., we do not behave selfishly all the time) and extra parameters can be added to formal mathematical models (risk aversion, social preferences and so on) to make allowance

NEOCLASSICAL ECONOMICS

The mainstream economics approach makes a number of assumptions. Although neoclassical economists would disagree on points of detail, they would adhere to some general principles:

1. People have a set of consistent preferences, which they 'reveal' through their behavioral choices;
2. People use logical forms of reasoning to arrive at judgements and decisions – although people may not know the formal rules and procedures of logical reasoning, they behave 'as if' they do;
3. People strive to maximize their 'utility' (i.e., happiness, satisfaction, well-being);
4. People process information in an unbiased way (at least, to the best of their ability);
5. Both individuals and firms strive to solve the 'optimization problem' – that is, to derive the most utility (pleasure or profit) from the allocation of scarce resources;
6. People are very sensitive and reactive to incentives, especially of a financial nature;
7. Individuals and firms are 'selfish' in that they place their own well-being and welfare above others';
8. The self-interest of individuals benefits society;
9. There are 'laws' of economics that are immutable and interference (e.g., by government) with them only thwarts the efficient allocation of scarce resources – of course in a 'mixed economy' some government regulation and economic management is necessary, but this is seen as a problem in that its possible adverse side-effects need to be monitored for inefficiencies (e.g., expenditure of socialized medical service, e.g., the NHS in the UK);
10. Economic principles are best expressed in mathematical form, allowing the construction of models built from basic assumptions/tenets/principles/axioms to arrive at logical conclusions (e.g., the consequences of increased taxation).

for people's everyday behavior (see discussion of New York City taxi drivers in Chapter 1). However, these assumptions cannot be relaxed to the point that they are no longer relevant.

A SYSTEM OF ASSUMPTIONS AND PRINCIPLES

Behavioral economics is defined as much by what it is *not* than by what it *is*. It stands in contrast to neoclassical economics, which is a system of assumptions, concepts, principles and (mathematical) procedures used to explain and predict ‘economic phenomena’ – in fact, this can be anything from investing in the stock market to investing in a romantic relationship (should you invest in one stock/person or diversify your portfolio?). As you will get to know well throughout this book, neoclassical economics is about the efficient allocation of scarce resources to maximize utility: for the individual, happiness/satisfaction; and for the firm, profit (or value of some other kind, e.g., market share). When applied to the individual ‘consumer’ – or, more broadly, the individual decision maker – neoclassical economics assumes that we know what we want (i.e., we have consistent *preferences*); we know how to get what we want in the most efficient way (i.e., we use logical, ‘rational’ judgement and decision making); and we seek to *optimize* the use of our limited resources (e.g., money, time and talents) to *maximize* the desired ends (in some form of psychological satisfaction, called *utility* – this term is what we might in everyday jargon refer to as well-being or benefit).

Ideas about the individual consumer/decision maker are bound up in neoclassical economics with the notion of ‘the firm’ – these are complementary sides of the same neoclassical economic coin. Although discussions of how firms operate may seem quite distant from how individuals form judgements and make decisions, in neoclassical economics they are tied together closely – at least in the formal mathematical models. As with the individual decision maker, the firm seeks to allocate its scarce resources (i.e., labor, land and capital) in the most efficient (i.e., optimizing) manner, and it does so in a rational way to maximize its utility (e.g., profit). In its pure form, all of this seems simple and straightforward, but as discussed below things are prone to get a little complicated, and even confused.

As introduced in Chapter 1, it is important to know that neoclassical economics is largely ‘normative’ in orientation, concerning itself with prescriptions for how people *should* behave. Clearly, it

also has moral, political and ethical aspects which reflect the *political economy* of classical thinkers (discussed below), and these aspects still run deep through neoclassical thought. It is of no small interest that Adam Smith – the first economist in the modern sense – was Professor of Moral Philosophy at Glasgow University. As we see below, around the eighteenth and nineteenth centuries, the ideas of a number of moral and political philosophers greatly imbued the world of economics we have today.

In contrast to neoclassical economics, behavioral economics is much less constrained by these early classical influences, but it is not entirely free of them (e.g., it still emphasizes the importance of utility maximization and efficiency). As discussed below, behavioral economics draws no small measure of inspiration from some of these earlier thinkers.

As the prefix suggests, *neoclassical* economics grew out of *classical* economics. Before we discuss in any detail the *neoclassical* approach (see Chapter 3), and equally before it is critiqued, we need to know something about the *classical* approach: it is from this groundswell of ideas that neoclassical economics draws its intellectual inspiration.

THE CLASSICAL ECONOMIC TRADITION

Looking back over the last few centuries, it is amazing to think that within a relatively short period of time, moral, philosophical, political and economic ideas were developed to such an extent that they sustain the intellectual life of society today. As summarized below, several notable figures are remembered for their lasting contribution. But before discussing their ideas, it is as well to know that classical thinkers believed that they had discovered natural laws and processes.

Even if we experience displeasure at the thought of the world depicted by classical economics, it would not be prudent to ignore its potential consequences – if true, they are highly important. A case in point was the notion of the ‘Iron Law’ of wages which states that labor rates could never rise above a mere subsistence level because, if they were to, the resulting increase in births and hungry mouths to feed would force down wages – as this example attests,

there were certain presumptions about how the working class would react to an increased wage rate. (The term was coined by Ferdinand Lassalle, but the origin of the concept is less clear and could be attributed to several economists, among them David Ricardo.) It was also assumed that labor would need to be paid above the mere subsistence level for the individual worker in order for them – most often, him – to raise a family in order to supply the next generation of workers. With just cause, in 1849 Thomas Carlyle dubbed economics the ‘dismal science’ (see text box). Fortunately, for the wealth and health of these classical thinkers, this Iron Law did not apply to their economic activities – this was one of the reasons for Marx’s class-based economics which made a clear distinction between ‘wage slaves’ and their capitalistic masters (e.g., Marx, 1932; based on notes written in 1844, but not published during his lifetime). (Along with other historical and contemporary resources, many of these classic works discussed in this section are freely available at: www.econlib.org.)

We now take a closer look at the development of the main ideas that characterize classical economics by discussing its most prominent thinkers and luminaries. This allows us to understand better the origins of *neoclassical* economics and to what extent behavioral economics represents a return to some old ideas.

ADAM SMITH (1723–1790)

Without much doubt, the towering figure in classical thought is Adam Smith. He is rightly considered to be the first economist in the modern sense – he introduced the notion of the ‘imaginary machine’ that entails the coordination of all economic activities in cause and effect relationships: the economic *system*. Smith was enlightened and although he is most known for his principles of the free market – one of the main ideas of classical economics – he believed this to be a means to an end, not an end in itself. His view was that the greatest happiness in life comes, not from the accumulation of money (or, more generally, ‘materialism’), but from the companionship of fellow men and women. His social views of economics were contained in his important 1759 book, *The Theory*

CLASSICAL ECONOMICS: THE DISMAL SCIENCE

A number of seminal ideas developed out of the classical tradition, although individual thinkers quibbled about detail and interpretation – this is not surprising because as George Bernard Shaw supposedly once quipped: if you laid all economists end-to-end they would not reach a conclusion! These important ideas included the following.

1. Prudent self-interest benefits the whole of society by allocating scarce resources in the most efficient manner – this is discussed below in relation to Adam Smith;
2. Individual liberty is fundamental: no one knows better what is good for them than the individual concerned;
3. There are invisible forces at work (Adam Smith's 'invisible hand') that guide the economy along productive lines – interference by government with such invisible forces leads to inefficiencies;
4. Free trade (both nationally and internationally) benefits the whole economy – for example, by the law of 'comparative cost advantage' (i.e., different countries can supply commodities and goods at lower relative cost);
5. Efficient production comes from the 'division of labor' (something that, much earlier, the Greek philosopher Plato spoke about); that is, the production process is broken down into specialized tasks each of which is performed by a dedicated worker (see below);
6. The accumulation of profit and the allocation of capital is necessary to facilitate efficient production processes;
7. Private capital(ism) is for the public good – and deprivations (e.g., subsistence wages of workers) are the necessary price that must be paid – much earlier, the Greek philosopher Aristotle also extolled the virtues of private ownership on efficient economic affairs;
8. Natural scarce resources (especially land, but also coal, oil, etc.) potentially limit increasing productivity, so international trade is essential as may well be 'imperialism' to secure the necessary factors of production;
9. Laws (e.g., of contract) and punishment (jurisprudence) are necessary to regulate the 'free' economic system in order for it not to be corrupted by immoral economic behavior which erodes trust and thus the general efficiency of trade.

of *Moral Sentiments*, which has been overshadowed by his much more famous 1776 book, *An Inquiry into the Nature and Causes of the Wealth of Nations* (often abbreviated as *The Wealth of Nations*). Smith's earlier book placed feelings, emotions, virtues and such like center-stage in economic life. The compatibility of these two views have long been debated, but they are not mutually exclusive. This is because there is so much that classical (and neoclassical) economics *does not* consider – 'social' preferences can always work their way into 'utility functions' (see text box) to maintain the elegance of neoclassical mathematical formalism. Such psychological notions

UTILITY FUNCTIONS

A utility function orders and measures preferences over a set of goods and services. Utility, which can be measured in a common metric, 'utils', represents the happiness, welfare or satisfaction resulting from the consumption of goods and services (broadly defined). As it is not possible to measure utility directly, it is typically measured in terms of 'revealed preferences': the decision made among an array of choices. In other words, an individual's actions/decisions *reveal* their true *preferences* (and these maximize their utility). The utility function is widely used in rational choice theory which neoclassical economists use to analyze choice behavior.

were rediscovered by behavioral economists, but they were there all along in Smith's classical work. As Thaler noted in 2015: "The famous Chicago economist George Stigler was fond of saying that there was nothing new in economics; Adam Smith had said it all. The same can be said of much of behavioral economics".

SMITH'S SENTIMENTS

When seen in the light of what we now know, remarkably Smith argued that social psychology tells us more about moral action than reason, let alone pure logic. Smith identifies the rules of 'prudence' and 'justice' and explains how these are required for society to survive and thrive.

PRUDENCE

Smith noted that individuals have, what he considers to be, a natural tendency to look after themselves. This he called ‘prudence’. But, he also noted that we have sympathy (today, ‘empathy’) towards others. For example, if we see people distressed or happy, we experience something of the same ourselves; and other people react in the same way to us. This allows us to regulate our feelings and behaviors towards others, and as we grow up we learn what is right and wrong – as labelled in Chapter 5, we acquire ‘manners’. According to Smith, this moral impulse stems from our social nature – in this view, we are far from selfish, ‘rational’ creatures: our actions are influenced by the emotions of other people. This social view is a central idea today in behavioral economics.

JUSTICE

In addition to Smith’s notion of prudence, he said we have ‘justice’. We may well be prudently self-interested – ‘charity begins at home’ – but we have to live in a community and this requires shared values and mutually beneficial behavior. A productive society needs people who are willing and able to do good, but this raises the prospect of free-loaders, who take all and give nothing back. It is for this reason that society needs a ‘justice’ system: primarily to deter wrong-doing and then to punish those who violate social rules. Justice stops us from harming other people and, as Smith put it, may be achieved by “sitting still and doing nothing”. As this account of Smith’s work shows, there has always been a close connection between economics and the law. Today, lawless societies are the very ones that are economically impoverished and international organizations, such as the World Bank, are much interested in establishing the ‘rule of law’ in order to foster economic productivity and the ‘wealth of nations’ – they even conduct ‘framed experiments’ to try to find out how best to motivate judges to be more efficient in terms of high quality output and less corruption.

In order to regulate individual behavior to achieve social harmony, Smith tells us that something else is required: the ‘impartial spectator’, who is conceived as an ideal person who would completely

empathize with our emotions and actions. The thought of such an observer helps to regulate our behavior because, according to Smith, we want to meet their expectations. This notion is bound up with the concept of conscience and seems not divorced from the notion of an all-seeing God who is continuously observing and judging us. (See Dan Ariely's observation in Chapter 1.) Now, all of this requires self-control – Smith called this 'virtue'. In contrast to Smith's notion of justice, this is a form of morality that requires active deliberation (in the classical tradition, it is also about what we 'ought' to try to achieve) – it may also be thought of as a personality characteristic, with those lacking in this quality being seen as feckless and irresponsible, and deserving of the negative consequences that are sure to follow. (This distinction of nature vs. nurture of virtue was put to good comic effect in the 1983 film, *Trading Places*, starring Dan Aykroyd and Eddie Murphy.)

Now, none of Smith's presumptions demand much in the way of a conscious calculating (human) machine. It is said to be part-and-parcel of our social nature: we are sensitive to other people's feelings, and we get pleasure when the things we do are praised, and we feel psychological pain when the things we do are criticized. We have a tendency to curb our excessive emotions (e.g., anger) because we know it would distress the other person. According to Smith, we aim to modulate our emotions to a point where the 'impartial spectator' would sympathize and approve of us, and we take pleasure in this knowledge. In this way, we 'socialize' to the society in which we live. The idea that we are seeking the approval of others – even the imaginary 'impartial spectator' – leads to the development of morality and socially-approved behavior.

All of the above is in the spirit of modern-day behavioral economics and it is essentially *psychological*.

SMITH'S 'INVISIBLE HAND'

More related to neoclassical economics, in his 1776 book, *The Wealth of Nations*, Smith gave us the notion of an 'invisible hand', which serves to guide the efficient allocation of scarce resources in the

capitalistic (*laissez faire*) economy. To understand both neoclassical and behavioral economics, it will repay us to summarize Smith's arguments.

We need to know that Smith's 1776 book has several themes. First, he argued that the nation's wealth consists of the store of goods and services it creates – today's gross domestic product (GDP), which we briefly discussed in Chapter 1, is based on the same idea. (When we focus on only the goods and services produced by a country's citizens, whether domestic or abroad, we have gross national product, GNP.) According to Smith, the way to increase wealth is to release the productive forces of society – to allow free spirit and human ingenuity to flourish. Here we see the forces of industry, creativity and innovation of the population. Smith was adamant that government regulation of commerce, however well intentioned, is counter-productive and prone to do more harm than good.

Second, the major components of how the 'market' system works come from the 'laws' of supply and demand. Scarcity of supply of a good or service means its price will rise because scarcity implies that more people want the goods/services than are available and many will be willing to pay a higher price to obtain them. But when there is a 'surplus' – fewer people wanting the goods/services than are available – the price must fall to attract more buyers. These assumptions lead to the notion of 'equilibrium': the idea that prices will always adjust to reach a 'market clearing' level where all goods and services are traded. Third, Smith argued that when a profit is made (the sale price is higher than the cost of production) this will attract new entrants into the market, especially if the level of profit is higher than that achieved in other markets. If this happens, the supply of the good or service is increased, the price will fall and so will the profit. A seemingly perfect mechanism for matching buyers and sellers, and all regulated by the 'invisible hand', achieving efficient production and the resulting equilibrium that leads to economic stability – and to boot, no need for political coordination or interfering regulators. The important point to note is that, although in all of this we may be acting in our own 'prudent' self-interest, the genius – if that is what it is – of the economic system

described by Adam Smith is that this self-interest serves to benefit the whole nation. As Smith said:

It is not from the benevolence of the butcher, the brewer, or the baker, that we expect our dinner, but from their regard to their own interest

In the next sentence Smith goes on to say:

We address ourselves, not to their humanity but to their self-love, and never talk to them of their own necessities but of their advantages.

So, we see, how self-interest leads to, what Smiths calls, beneficial “unintended social outcomes”. (Smith’s theory is satirized in the 1987 film *Wall Street*, in which Gordon Gekko famously gives an extended speech to justify his belief that ‘greed is good’. Given what we now know since the 2007–2008 financial crash, we may be forgiven for thinking that some people mistook *Wall Street* for a financial industry training film!) Smith’s theory is much more nuanced than popular depictions might lead us to believe.

The notion of an invisible hand relies on the assumption that market participants can compute complex information and behave according to Smith’s principles. In thinking about the assumptions of neoclassical economics, it is important to note that such a process need not be conscious, but it must mean that the human mind, in some way, is sensitive to these economic forces and is motivated to respond accordingly.

Smith was, indeed, one of the first thinkers to address the question of the *efficiency* of production – efficiency in the allocation of scarce resources is a recurring theme in neoclassical economics. Presaging the industrial age, Smith contended that the division of labor, and the accumulation of capital, are vital ingredients to a successful economy. He noted that large efficiencies are achieved when the production process is broken down into many small tasks, each one performed by a skilled operative (his famous example is the pin factory; see text box). Such efficiency ensures that output is maximized for any set of inputs – resources are *optimally* allocated to maximize utility, in this case profit. This profit can then be invested

THE PIN FACTORY

The classic example of the beneficial effects of the division of labor was seen in the ‘trifling manufacture’ of the humble pin (it can be seen on the £20 bank note). Adam Smith visited a pin factory and observed that it required 18 separate production processes. He observed that the division of labor leads to greater ‘dexterity’ (skill) in workers, which along with avoiding the time-consuming act of moving workers from one production process to the other, as well as the use of capital-intensive machinery, creates great economic efficiency: whereas one operative could make between 1–20 pins a day, when labor was divided the rate of productivity rose to 4,800!

However, division of labor comes with a high price, as noted by Smith:

His dexterity at his own particular trade seems . . . to be acquired at the expense of his intellectual, social and martial virtues . . . unless government takes some pains to prevent it

Indeed, it may lead, through the narrowing of interests, to such ‘mental mutilation’ as to produce a breakdown of moral regulation by the Impartial Spectator to whom we aspire to please in our actions (see above).

in new forms of production, exchanges with others, and so on, to fuel economic expansion and the ‘wealth of nations’.

These were seminal ideas which sparked intellectual excitement in those notable philosopher-cum-economists who followed in Smith’s footsteps.

OTHER CLASSICAL THINKERS

Classical economics is defined by the ideas of Adam Smith as well as those of other seminal theorists. What is important for our understanding of present-day behavioral economics is how these theorists shaped classical and, then, neoclassical economic thinking.

DAVID RICARDO (1772–1823)

David Ricardo, along with Adam Smith, is regarded as one of the outstanding economists of the classical age. His ideas permeate the neoclassical economics we have today. Trained as a stock broker by his father, by the age of 27, Ricardo was very successful. However, his Jewish family disowned him when he married a Quaker. (During this time, Ricardo happened to read Smith's *The Wealth of Nations* and was excited by it.) He then set up his own stock brokerage company acting on his own account as a stockjobber, and by the age of 37 he was fabulously wealthy – although by means of what we would now call insider trading and market manipulation related to the Battle of Waterloo. From the age of 37 to his early death at the age of 51, he spent 14 years thinking and writing about economics and engaging in stimulating debates with his notable contemporaries (e.g., Jeremy Bentham, see below).

Like Adam Smith before him, Ricardo argued for free trade and the virtues of non-government intervention (e.g., Ricardo, 1817). In supporting the idea of free trade, Ricardo is known for his principle of *comparative costs* (sometimes called ‘comparative advantage’; see text box). The doctrine of comparative cost advantage is pleasing and an important justification of international trade. It shows that all countries have the potential to offer something of economic value to themselves and the rest of the world – just think of tea from China and call centers in India. The globalization of trade is a direct consequence of this idea.

Ricardo also advanced the idea of the law of diminishing marginal returns. (We will see the importance of *marginalism* to neoclassical economics in the next chapter – it is central to the very notion of ‘rationality’.) This ‘law’ states that as one input variable is increased while other input variables are held constant (fixed), *increments* to output (marginal returns) are bound to decline. In other words, the efficiency of the combination of inputs decreases which may lead to declining productivity of one unit of input. A classic example describes how adding more workers to a field or factory will eventually lead to less output per worker as they start disturbing each other's work, or have to wait their turn to access tools.

COMPARATIVE COST ADVANTAGE

Comparative cost advantage underpins the idea that each country has an advantage in the cost of producing certain goods (and today, services). The concept is often misunderstood because it is more intuitive to assume that the country which can produce a good at the lowest absolute cost should produce it. Thus, countries with low labor costs might be able to produce a number of goods at lower costs than countries with high labor costs. However, as Ricardo explained, using the example of producing cloth and wine in either England or Portugal, what really matters for international trade is the comparative cost advantage of producing these goods; that is, the country with the lowest opportunity costs (i.e., the cost of the best foregone alternative, see text box below) of producing wine should produce it. In Ricardo's example: how many units of cloth must Portugal give up in order to produce one unit of wine? Portugal has the comparative advantage in the wine industry if it can produce wine at lower opportunity costs (production of fewer units of cloth) than England. With the international trade of these goods and services, there is benefit to the whole world – this comes from the most efficient allocation of scarce resources (today in Britain, we see this with the importation of coal and steel).

One input variable that is often described as fixed in these models is land. As a consequence, as good land is scarce and will become increasingly sought after with economic expansion, its value would increase to the joyful benefit of the land owner.

In the spirit of free trade, Ricardo argued that the laws of economics should be allowed to play themselves out, which means among other things that the poor should not be supported beyond a level of subsistence as this would only erode their work motivation, encourage reproduction beyond what can be sustained by subsistence wages, foster fecklessness, and generally undermine the efficiency of the market system – this was his *Iron Law of Wages*, although others made essentially the same point before and since. (Critics have accused Ricardo of holding to this belief from the position of being a Gentleman of Leisure, secured from what would now be

considered ill-gotten gains.) As confirmation of the reverberation of his ideas throughout the years, Ricardo popularized the notion that the road to economic hell is paved with good intentions – whenever one passes a beggar in the street, it is Ricardo’s voice that is heard whispering that giving money to them will *really* do more harm than good.

In mitigation of Ricardo’s position, he was interested only in respecting what he saw as natural laws of economics – in the case of wages, the ‘Iron Law’. But, once we move away from this view of natural laws of economics to one based on psychological factors, Ricardo’s approach loses much of its veracity – for it would then be possible to use behavioral insights to influence people to behave in ways that benefit society (e.g., using strategies to increase motivation for work and to limit excessive births through the prudent use of contraception; see Thomas Malthus, below).

Now, Ricardo’s ideas may well seem somewhat distant from the concerns of modern-day behavioral economics. However, they should not be seen as such. Behavioral economics challenges the central assumptions of neoclassical economics. For example, it challenges the idea that there exist natural ‘Iron’ laws that govern economic life independently of psychological factors. Also, as ‘nudge’ theory attests (see Chapter 6), behavioral economics does not see government interventions to influence people’s decision making as inevitably a bad thing – indeed, it is argued that such nudging is needed to encourage people to make the right decisions (e.g., Thaler & Sunstein, 2008). All of this raises moral, ethical and political issues that are still debated today.

JEREMY BENTHAM (1747–1832)

Another notable thinker in the classical tradition was the moral and political philosopher, Jeremy Bentham. (You can see his body in a showcase at University College London, an institution he helped to found.) He is best known for advocating *Utilitarianism*, which advances the idea that the greatest happiness of the greatest number should be the foundation of morals and legislation (e.g., Bentham, 1789). Bentham was interested in what regulates human behavior,

and the close connection between jurisprudence and the ‘economic mind’. His work on the notion of utility had a major impact on the development of neoclassical economics.

Bentham’s philosophy can be best described as a form of *consequentialism*, based on the idea that actions, policies, rules, and so on should be judged on the basis of their consequences; that is, the utility they yield. This central notion has influenced the public application of behavioral economics in nudge initiatives (see Chapter 6) where the criterion of a successful policy intervention is whether it *works* to improve the welfare of society. It is also the general criterion used in wider public economic policy.

THOMAS ROBERT MALTHUS (1766–1834)

Thomas Malthus is best known for his work on the relationship between population and the production of food. His conclusions are often cited as testimony to the accuracy of economics being a ‘dismal science’. Rather like a mathematical economist of today, Malthus was diligent in gathering information on births, marriages, deaths, longevity and number of offspring. His most famous book, *An Essay on the Principles of Population* (1798), concluded that as the supply of food increases *arithmetically*, but the population increases at a much faster (*geometric*) rate, the destiny of Mankind is to live on the edge of starvation. Adam Smith believed much the same; as he states in *The Wealth of Nations*: “As men, like all other animals, naturally multiply in proportion to the means of their subsistence, food is always, more or less, in demand”.

If there is a positive message to be found in Malthus’s work – and they are not so easy to find – it is the dismal science predicts that, because populations do not always live on the edge of starvation, this must mean that they make decisions to avoid this outcome. For example, people may choose to marry late, use contraception, emigrate, tolerate poor living conditions, engage in infanticide and, even, wage war – a somewhat dismal means to avoid a dismal outcome! The important thing to bear in mind is that we are not merely passive recipients of the terrible fate of nature which enacts the immutable laws of economics. However, it can sometimes seem as

if we still live in a dismal world. Although hope may spring eternal, reality can be jarring. Hundreds of years after Malthus, and with the development of a powerful set of economic principles and procedures, the nightmare he envisioned of populations living at the edge of starvation is not absent from all parts of the world: populations' demand for nutrition often outstrips the production and supply of food and water, especially in times of famine.

But, the Malthusian view of the world is not without hope, although it is often without expectation. His interest in the sensitivity of people to incentives is something that dominates neoclassical economics. From this tradition, we get the notion that people are capable of making the correct choices, if sufficiently incentivized to do so. We will further discuss the role of incentives in decision making in later chapters. Malthus' work and that of other classical economists is thus still highly relevant today.

JEAN-BAPTISTE SAY (1767–1832)

An achievement of Jean-Baptiste Say is to have his name attached to an economic 'law'. 'Say's law' states that supply (or production) creates its own demand – "build it and they will come" – which happened to be the guiding spirit beyond the project to build *The Titanic* ship. Say's law is a rather fine example of the operation of Adam Smith's invisible hand. As Say said in 1803: "It is worthwhile to remark that a product is no sooner created than it, from that instant, affords a market for other products to the full extent of its own value". In other words, workers receive wages for their labor which they will then use to purchase other goods. This increase in production thus creates demand for other goods in the economy, leading to economic growth.

Say believed that his law holds for the short-run as well as the long-run. While it might be true that there cannot be a glut of goods in the long-run, the famous twentieth-century economist, John Maynard Keynes, in particular challenged the truth of this law for the short-run – sometimes aggregate demand is too low to 'clear' the market at prices which entail no loss, such as during times of recession and depression. Reflecting back on the Great Depression

in the early 1930s, J. K. Galbraith (1975) opined that Say's Law is "the most distinguished example of the stability of economic ideas, including when they are wrong".

JOHN STUART MILL (1806–1873)

Perhaps the most famous moral philosopher of all time, John Stuart Mill, followed in the footsteps of his less well-known but still illustrative father, James Mill (1773–1836), who was a notable philosopher, historian and political thinker. John Stuart Mill's views were expressed in his 1848 book, *Principles of Political Economy*, which was built upon the works of Smith and Ricardo. In the sphere of economics, Mill is especially remembered for developing the idea of 'opportunity cost' (see text box) and arguing for the Ricardian principle of comparative cost advantage (see above). Like David Hume (1711–1776) before him, Mill was also a believer in freedom of speech, and he is best known for his book, *On Liberty* (1859).

OPPORTUNITY COSTS

The principle of opportunity costs is fundamental to economic thinking – it is seen in the guise of cost-benefit analysis. When faced with different courses of action, the opportunity cost refers to the utility (satisfaction, benefit, profit and so on) of the best *foregone* alternative. For instance, if you decide to see a movie with your friends, what is your best alternative option? Maybe dinner with your family or watching TV at home? These foregone alternatives are the opportunity costs of your choice – they are real enough but usually not salient to us (for this reason, they take some thinking about to appreciate them). In the case of New York City taxi drivers (see Chapter 1), finishing work early incurs a cost in terms of foregone income, but working longer incurs a cost in terms of foregone leisure time – it is the costs and benefits assigned to these alternative choices that determine the decision made: this is how we maximize utility.

Mill argued for a free and liberal society, not only as a political ideal but as a means to achieve an efficient economy. Central to Mill's position was the idea that the utility of society is maximized by allowing people to make their own choices. According to this view, we should only interfere with the liberty of others in self-protection – this is one major role for government in establishing effective national defense. This has been a dominant theme in neoclassical economics (and 'NeoCon' politics), and provides an intellectual and moral underpinning of the 'market economy'.

WILLIAM STANLEY JEVONS (1835–1882)

Along with two other notable economists, Leon Walras (in Switzerland) and Carl Menger (in Vienna), and quite independently of their work, William Jevons (in Manchester) is best known for contributing significantly to the 'marginal' view of economic behavior which has come to exert a dominant pull on neoclassical thinking. The marginal view, which was formalized in Alfred Marshall's seminal *Principles of Economics* (1890; discussed in Chapter 3), contends that the utility ('value') of each additional unit of a commodity (i.e., its increment, extra, or *marginal* utility) decreases with further consumption. The principle of declining marginal utility says that the more we have of something, the less pleasure (utility) we get from each additional unit of consumption. Consider the declining marginal utility of money: the first million will always be sweeter than the second! To give an everyday example, the first bite of food has high value (utility) for a hungry person, but after further consumption, each additional mouthful has lower value until it reaches zero and may even become negative ('disutility').

Jevon's work serves well to illustrate the problems with an economic perspective that does not sufficiently consider the 'human capital' of skills, knowledge, innovation and creativity – that is, a view that places immutable laws above psychological factors. This is seen in the 'dismal' conclusions of Jevons' consideration of the 'Coal Question' in Britain (Jevons, 1865), which said that industrial productivity would be increasingly limited by the finite supply of this vital natural resource.

MORAL AND POLITICAL ASSUMPTIONS

As we have seen, the classical roots of economics run deep in modern-day neoclassical thinking. Today's undergraduate economics students are still being taught about comparative cost advantage, utility functions, opportunity costs, diminishing marginal utility, and some of the other economic concepts presented in this chapter. But, not everyone agrees with the assumptions that underpin this mainstream approach. For example, Noam Chomsky, who is not only a famous linguist but also a political philosopher, certainly does not agree with the 'value' placed on competition and the 'winner takes all' of the free market espoused by neoclassical economists, especially as it is expressed in the USA. If we believe that the market is not 'free', and 'the firm', as envisioned by classical economists, no longer exists in the modern world, then these assumptions start to appear rather threadbare – they never appealed to the likes of J. K. Galbraith and other 'institutional' economists who have long argued that power structures in society shape economic activity, not Adam Smith's mysterious 'invisible hand'. (See Dan Ariely's quip about this in the last chapter.) In Britain, the belief that we need not, and indeed should not, be slaves to economic 'laws' led, among other things, to the establishment of the National Health Service (NHS) – although some people have called attention to its unfortunate outcome, as predicted by classical thinkers.

Still, the apparent beauty of Adam Smith's guiding 'invisible hand' is that it does not require any form of deliberate or centralized planning – it happens all by itself, especially if left alone, unmolested by government interference and, even, well-intentioned, meddling. Through this conceptual lens, it is easy to see just how the capitalist system is seen to be a work of wonder! This was the view of one of the most famous economists of the mid-to-late twentieth century, Milton Friedman, who wrote the 1980 best-selling book whose name says it all, *Free to Choose*. The ideas it conveyed drove forward much of the economic policy of the Reagan and the Bushes' terms of office in the USA, as well as the Thatcher governments in the UK during the 1980s – if nothing, neoclassical economics packs a punch.

As the above discussion shows, in reality (though often not in the classroom) economics and politics are rarely separated. A few years before Adam Smith, the moral philosopher David Hume (1711–1776) popularized the view that still holds sway today that economic freedom is a precondition for freedom more generally. Essentially the same point was made by Friedrich Hayek in his 1944 book, *The Road to Serfdom*. This contention seems to be one reason why so many people adhere to the notion of neoclassical economics in objection to ‘big government’ – even when they may not embrace all of its assumptions. Around the same time, in 1945, the philosopher Karl Popper published *The Open Society and its Enemies*. One of the ‘enemies’ was Marxist ideology that had already dominated Russia and China, and later Cuba – for the modest price of a tourist card, its consequences can be seen writ large in the modern-day world: decaying buildings, long queues and empty shelves in shops, and appalling living conditions endured by the majority of the population. As this specific example illustrates, those who want to throw out the neoclassical economic dirty water need to have a strong grip on the libertarian baby.

DISSENTING ECONOMICS

It never was the case that neoclassical economics had things all its own way – it was never the only game in town. This is important to know because many accounts of behavioral economics focus on the perceived problems of neoclassical economics and tend to ignore the wider realm of economic, social and political thought, to which it may trace its origins. People were challenging the conventions of neoclassical economics long before behavioral economics came onto the scene. For this reason, to best understand the position of behavioral economics in relation to neoclassical economics, we really need to know the position of neoclassical economics in relation to these broader economic themes. To this end, we will now discuss the work of two early critics of (mainstream) neoclassical economics.

THORSTEIN VEBLEN (1857–1929)

Notable pockets of resistance to the natural science approach to human behavior, and the specific assumptions of neoclassical economics, have always been heard around university corridors. One of the foremost came from the, so-called, ‘American Marxist’, Thorstein Veblen, who published in 1899 a remarkable little book, *The Theory of the Leisure Class*, in which he examined the fashions and foibles of social and economic life. Veblen is famous for coining the phrase ‘conspicuous consumption’ to denote the production of socially-valued artefacts at the expense of wider society. In particular, he pointed to, as he saw things, wasteful patterns of production and consumption. Veblen’s point was that economic life serves social ends (e.g., status, hence the ‘conspicuous consumption’ of works of art, and so on), and although people may be seen to be maximizing utility, it is very much a socially-defined and constrained type with socio-political overtones. In Veblen’s ways of viewing things, utility maximization, efficiency of the market place and equilibrium (where it was established) did not equate to a productive and successful society. Indeed, he reasoned these neo-classical economic principles may well lead to a socially divided and divisive society, with a concentration of utility, much like capital, in the hands of the few and not the many – in today’s world, such ideas seem far from old-fashioned.

JOHN KENNETH GALBRAITH (1908–2006)

Such challenges to the foundations of neoclassical economics are the bread-and-butter of behavioral economics. This dissent was popularized by one internationally renowned economist who followed in Veblen’s footsteps, J. K. Galbraith – his views can be found in numerous books, and seen in his 1977 BBC television series on economic history, *The Age of Uncertainty* (this can be accessed via the internet). Galbraith achieved fame and fortune, and some notoriety, for developing dissenting economic themes in his runaway best-sellers, *The Affluent Society* (1958) and *The New Industrial State* (1967). Both challenged the assumption of the *sovereignty* of the consumer. Adam Smith thought something similar when

he entertained the possibility that firms might conspire among themselves to the detriment of the consumer – as he puts it: “conspiracy against the public or in some other contrivance to raise prices” and fixing a price “which can be squeezed out of the buyers”. In addition, in relation to conspiring against workers, Adam Smith says (1776):

We rarely hear, it has been said, of the combinations of masters, though frequently of those of workmen. But whoever imagines, upon this account, that masters rarely combine, is as ignorant of the world as of the subject. Masters are always and everywhere in a sort of tacit, but constant a uniform combination, not to raise the wages of labour above their actual rate.

Although to keep up the pretense, “These are always conducted with the utmost silence and secrecy”. In marked contrast, when workers combine to raise the wages of their labor, “they are always abundantly heard of”. It, thus, seems that the force of the Iron Law of wages (see above) might, after all, need a little helping (non-invisible) hand!

Prescient, too, was Smith’s warning that a business-dominated political system could lead to a conspiracy of businesses and industry against consumers, with business pulling the strings of government – politics being in the pockets of Big Business. These dangers are real enough; otherwise why else would the UK government have established the Competition and Markets Authority (CMA) which scrutinizes business mergers and take-overs. The Financial Conduct Authority (CFA) is similarly charged with *protecting* financial consumers and regulating financial companies, as well as ensuring the integrity of the UK’s financial markets. Neither regulatory organization is short of work.

Expressed through dry wit and elegant turn of phrase, Galbraith had cause to lament one major example of the failure of neo-classical economists. As he wryly commented: “I was here during the years of the Great Depression, when nobody could say that the economic system was working with great precision and great compassionate effect” (Conversations with History: John Kenneth

Galbraith, 1986). As seen in the last chapter, the same can be said of the financial system in 2007–2008.

Left to market forces, history attests to the fact that the economic system is prone to periodic crises. This is most notably seen in labor (dis)equilibrium – and it is felt acutely by those afflicted by it.

LABOR (DIS)EQUILIBRIUM

Following the logic of the laws of supply and demand, the hope, indeed expectation, was that, in the absence of government intervention to fix wages, there would be full employment. Here, again, we see the prospect Adam Smith's 'invisible hand' at work: a surplus of workers (unemployment) would push down wages until the (marginal) wage rate equaled the (marginal) income of their unit of production. (We see a lot more of 'marginal' effects in Chapter 3, but for now it simple means an extra unit of input or output.) In other words: if prices and wages are free to vary in times of unemployment, wages will fall until the wage that is needed to produce one more unit of a good equals the extra product of that labor (i.e., the extra income achieved). The economy will then achieve a labor *equilibrium* which means that the supply for labor will equal the demand for labor.

To understand the logic behind this equilibrium, one has to think about how workers will react to a fall in wages. Some workers will withdraw from the labor market and the supply of workers will, therefore, reduce. At the same time, firms will employ more workers (increasing the demand for labor) because lower wages imply that they can produce more goods at lower costs. It makes sense for firms to employ more workers until the benefit that each new unit of labor brings equals the costs of that labor (the wage). The Great Depression in 1930s USA was one of the major shocks to this otherwise elegant theory of equilibrium; and subsequent crises provided little in the way of reassurance that they were not an inherent part of the economic system.

John Maynard Keynes is justly famous for identifying the problem of the failure of equilibrium. In his ground-breaking 1936 book, *The General Theory of Employment, Interest and Money*, he proposed

the management of aggregate demand in the economy to smooth out the troughs and peaks of the 'business cycle' (as it was often called) by fiscal means (i.e., spending, taxation) and various forms of the control of the money supply (e.g., altering the central bank interest rate). According to Keynes, this could moderate recessions and stave-off depressions. The overworked printing presses of central banks throughout the world in recent years are testimony to the influence of Keynes' book – this 'printing of money', as it was bluntly labeled in the past, now goes by an ambiguous, but altogether more pleasing-sounding, term: 'Quantitative easing'. But the effect is the same: injection of liquidity into the banking system and, thus, the economy more generally, and the raising of the aggregate level of demand which, it is hoped, will lead to a higher level of production resulting from greater demand (something of a compliment to Say's law, see above). Central to Keynes's thinking is the notion that economic conditions are much influenced by 'animal spirits' and they do not reflect merely the evaluation of objective numerical facts. *Behavioral economics writ large!*

In contrast to this Keynesian demand side management of the economy, neoclassical ('monetarist') economists (e.g., Milton Friedman) favor 'supply' side economics, entailing the promotion of competition in the private sector, reducing the size and impact of government expenditure, and lessening the restrictive practice of the trade unions. All of this is very much in the tradition of the political philosophy of Adam Smith and David Ricardo – in common with Monetarism, Ricardo opposed the printing of money because he thought it inflationary (the price paid, one might say, by meddling with immutable natural laws of economics discovered by classical economists!).

The essence of the complaint by the likes of Veblen and Galbraith – and, as we have seen, this has echoes in the classical work of Adam Smith – is that economics is not *at all* like the natural sciences. The variables that make up the economic system are not fixed in the way they are in physics; they are not immutable. Instead, variables are fluid, changing, and subject to influence from the political and social environment. The economic system is dynamic, not static, and people are *active* participants in it. In all of this, the psychology

of the individual and the collective ‘people’ matter. This is what behavioral economics assumes and it was the challenge of those critics long before the emergence of this new discipline.

Establishment reactions to such dissenting voices led to the accusation that the likes of Galbraith were not *really* economists, but social and political commentators, or more accurately not the *right kind* of economists – but this did not deter the American Economic Association from electing Galbraith President in 1972 (an honor bestowed on the behavioral economist Richard Thaler in 2015, who went on to win the Nobel Prize in 2017 – for decades before, Richard Thaler was marginalized by mainstream economics, but is now lorded by even his neoclassical peers).

PSYCHOLOGY: LOST AND FOUND

As Bob Dylan sang in the 1960s, “the times they are changing”, and they most certainly have in economics. When thinking about these developments, we might well ask, given the importance attached to realistic psychological assumptions in the work of classical economists, most notably Adam Smith, is it not strange that economists came increasingly to side-line psychology in favor of ‘axiomatic’ assumptions of ECON – as a form of its own misbehaving, it clung to older psychological ideas and willfully ignored later developments in psychology. To be fair to economists of the time, turn of the twentieth-century psychology had little to offer that was *tractable* – that is, concepts that are easy to incorporate into formal economic models. Freudian notions of repressed sexuality held little interest – at least in the professional lives of economists – and things were not much better in academic psychology where psychological ideas were many and varied, and it would be hard to distil them into a set of assumptions/principles that could guide systematic, let alone rigorous, economic thinking (although the behaviorist’s stress on the power of ‘reinforcement’ – incentives of various kinds – came very close). Along with this rejection of psychology, as the twentieth century dawned, academic economics increasingly followed the natural sciences in its pursuit of age-old laws and mathematical formulation.

The problems with this whole-scale rejection of psychology led one well-known psychologist, William McDougall, in 1908, and in a tone of frustration, to proclaim:

Political economy suffered . . . from the crude nature of the psychological assumptions from which it professed to deduce the explanations of its facts and its prescriptions for economic legislation. It would be a libel, not altogether devoid of truth, to say that classical political economy was a tissue of false conclusions drawn from false psychological assumptions.

Many academics who today lean towards behavioral economics would agree with McDougall's view.

BEHAVIORAL INSIGHTS AROUND THE WORLD

Psychological ideas have come of age. Today, there is widespread adoption of behavioral economic principles. Since 2010, a number of governments around the globe have set up behavioral units for example in the UK, Australia, Canada, Denmark, Singapore and the United States. The first of this kind was the UK's Behavioural Insights Team (BIT), also known as the Nudge Unit, which was established in 2010, and later privatized in the form of a social purpose company, which allowed the BIT to provide advice to companies and foreign governments.

The World Bank launched its Global Insights Initiative (GINI) in 2015 to incorporate behavioral insights into project design and development interventions. The 2015 World Development Report, appropriately titled *Mind, Society, and Behavior*, gives examples of considering the social context in which decisions in developing countries are made. For example, it is better to approach poor farmers about enrolling their children in school when their seasonal income is high.

The United Nations (UN) appointed their first Behavioral Science Advisor only recently. UN Secretary General Ban Ki-moon noted the value of using behavioral insights for policy formulation and to ensure the success of the UN's Agenda 2030:

Our organization, our global agenda – and most importantly the people worldwide they are intended to serve – deserve nothing less than the best science available. A human-centered agenda requires a rigorous, research-based understanding of people.

(United Nations Development Programme, 2016)

Agenda 2030 includes 17 sustainable development goals, which were adopted in 2015 and include objects such as achieving zero hunger, good health and well-being, quality education, gender equality and the elimination of poverty (United Nations, 2015). The UN developed for each of these 17 goals specific targets that are to be achieved over the next 15 years, and behavioral insights will play a key role in reaching these.

CONCLUSIONS

We have seen the development of ideas from the classical moral and political philosophy of the eighteenth and nineteenth century which made a serious attempt to understand the nature – and natural laws as they were seen – of economic life. The views expressed were imbued with political overtones as, indeed, they must be because they were dealing with the management of the economy and its political regulation. However, these ideas were of their time, even though they must have seemed ever-so-fixed and immutable when first formulated. As classical economic thought segued to neoclassical assumptions and principles, economics started to presume a more scientific status, but it never fully separated itself from its origins in political and moral matters. As we have been continuously reminded by its critics, not all was well, and reality provided a lesson in the form of periodic crises – the specter of Karl Marx's prediction of the inevitable collapse of capitalism gave food for thought to more intellectually sensitive theorists and public policy economists. The dawning of more sophisticated ideas in psychology provided new impetus to these developments and the work of Tversky and Kahneman in particular contributed greatly to the synthesis of psychology and economics – to the emerging field of behavioral economics.

The next chapter details the assumptions and principles of neoclassical economics, and the problems it encounters when trying to account for everyday economic life. It is against this background that behavioral economics is defined.

FURTHER READING

- Coyle, D. (Ed.). (2012). *What's the Use of Economics? Teaching the Dismal Science After the Crisis*. London, London Publishing Partnership.
- King, M. (2016). *The End of Alchemy: Money, Banking, and the Future of the Global Economy*. New York: W. W. Norton & Co.
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ECON *HOMO ECONOMICUS*

INTRODUCTION

We have now got to the point where we need to define the main assumptions and principles of neoclassical economics. This mainstream economics approach has a very definite view of the ‘economic agent’: *homo economicus* or ECON. Behavioral economics stands in marked contrast to this view. To understand properly what behavioral economics is *not*, we first need to be very clear what neoclassical economics *is*. This chapter outlines its major features.

FUNDAMENTALS OF NEOCLASSICAL ECONOMICS

So, what do we actually mean when we talk of neoclassical economics? We have seen its outlines in Chapter 2, but we need to know more. It owes much to the highly influential 1890 book, *Principles of Economics*, by Alfred Marshall. This book came to represent what is meant by academically-rigorous economics – then and now. Not only did Marshall distil the major assumptions and principles of economics, he illustrated them with captivating graphs which allowed visualization of complex mathematical relationships. This set the tone and provided the analytical template for the years to

follow. It centered economics around several major concepts, including rationality, preferences and utility maximization. Efficiency is always at the heart of these processes: getting the most out of the allocation of scarce resources. At its conceptual heart, neoclassical economics assumes individuals act on consistent preferences, and it takes the maximization of satisfaction (utility) of these preferences as its normative criterion (i.e., the way things *should* work). It is the combination of these notions that comprise what is meant when we talk about neoclassical economics (see text box). There are clear links with the classical economics we summarized in Chapter 2: as pointed out by Keynes in his Preface to the German version of his highly influential *General Theory* (1936), Marshall “was at particular pains to emphasise the continuity of his thought with Ricardo’s”.

NEOCLASSICAL FUNDAMENTALS

The main tenets of neoclassical economics concern:

- Rationality, which is expressed in consistent preferences and although they are latent (hidden) they are revealed in choice behavior when the incentives are sufficient to motivate us.
- We aim to maximize our personal utility and we do this by allocating our limited (scarce) resources in the most efficient, optimizing manner possible, which we do by employing good enough mathematical (but not necessarily conscious) means.
- People act on the basis of full and relevant information.
- The notion of *homo economicus* entails that we look after ourselves first and foremost, and to the extent that we help other people to increase their utility, this must lead to an increase in our own utility (e.g., the ‘warm glow’ from giving to charity).

These simplifying assumptions allow rigorous mathematical modelling of human behavior, something that is not possible if we allow for the complexity of real, often non-rational, behavior – in economics, mathematics is hard at the best of times, so to introduce psychologically realistic assumptions tends to make it unwieldy and intractable.

Alfred Marshall may, indeed, be credited with instilling the desire to base economic theorizing on sound mathematical foundations, but he was sensitive to its allure and limitations. As he stated in a letter to A. L. Bowley in 1906:

(1) Use mathematics as shorthand language, rather than as an engine of inquiry. (2) Keep to them till you have done. (3) Translate into English. (4) Then illustrate by examples that are important in real life. (5) Burn the mathematics. (6) If you can't succeed in 4, burn 3. This I do often.

(Cited in Sills & Merton, 2000)

Now as then, the limitations of a too narrowly-defined mathematical economics were highlighted by Mervyn King in 2016 in his critique of the financial crisis of 2007–2008 – as the then Governor of the Bank of England he is in the best position to know. Yet despite Marshall's warning, neoclassical economics developed along very specific mathematical lines, combining algebraic rigor with economic 'laws' to establish a powerful social science with considerable practical implications and applications.

ECONOMIC ENTITIES

When thinking about preferences and utility maximization, neoclassical economics assumes two entities: (1) the individual (also referred to as the consumer – the idea is that we are always consuming something, e.g., romance) and (2) the firm. Both the individual and the firm seek to allocate scarce resources in the most efficient manner in order to maximize their payoff: in the case of the individual, some form of happiness (utility); and in the case of the firm, profit (or some other *value* measure; e.g., market share). It is, indeed, interesting to note that the same analytical machinery is applied to these very different economic entities – and it may be for this reason that neoclassical economics seems to contain such a circumscribed vision of the individual human agent. In any event, to understand properly the neoclassical economic view of 'the consumer' we need to know something about 'the firm'.

MICROECONOMICS

As suggested by the name, the subfield of economics known as ‘microeconomics’ (*mikros* means small in Greek) is concerned with the behavior of individuals and firms in making decisions regarding the allocation of scarce resources. The other major subfield is ‘macroeconomics’ which is concerned with the aggregate economy (it examines general, economy-wide factors, such as economic growth, inflation, the unemployment rate and the like).

THE FIRM

Central to Alfred Marshall’s important work was the characterization of what is known as ‘the firm’ – this is the focus of the subfield of *microeconomics* (see text box). In its pure form, the theory of the firm contains several cardinal features. First, firms are assumed to sell standardized products so that the product from one firm is a perfect substitute for one sold by another firm – in the modern world though, brand marketing is all about differentiating products (see Chapter 7). Second, firms are said to be price takers, not makers, which means that they treat the ‘market price’ as given. Third, it is assumed that there is free entry and exit in the market with perfectly mobile factors of production (e.g., labor, capital, land, as well as intellectual talent), at least in the long run – in many sectors of our modern economy, this is far from being the reality. Lastly, both firms and consumers have perfect information – no one is hoodwinked about the nature of the economic transaction. These assumptions allow the construction of elegant mathematical models that can be used to describe, understand and predict the future (e.g., what would be the consequence on consumer ‘demand’ of raising the price of petrol by 10% – the manner in which consumers react to a change in unit price is known as the ‘price elasticity of demand’; see text box).

Marshall is noted for introducing into economics the standard supply and demand graph, which is now contained in every economics textbook (also here, see Figure 3.1). The graph relates: (a) supply and demand curves; (b) market equilibrium; (c) how the quantity supplied/

PRICE ELASTICITY OF DEMAND

The price elasticity of demand is a measure of how sensitive demand is to a change in the price of a good or service. It is calculated as follows: $\text{Price Elasticity of Demand} = \frac{\% \text{ Change in Quantity Demanded}}{\% \text{ Change in Price}}$. If a small change in price is followed by a large change in quantity demanded, the good/service is said to be elastic (i.e., responsive to a price change – this usually happens when substitutes exist, for example, consumers might switch from margarine to butter if the price of margarine increases); conversely, if the demand for the good/service is inelastic then this means that a large price change is followed by only a small change in demand for the good/service. Demand for goods that are necessities and for which consumers cannot find suitable substitutes is usually price inelastic (for example, petrol – a 10% increase in prices will usually not lead to a big decrease in demand).

demanded is related to price; (d) the law of marginal utility; and (e) the law of diminishing returns. This has become the principal – and the principled – way economists communicate their ideas.

All of the above assumptions have been scrutinized and challenged, and we have already seen examples in previous chapters of this book – we will see a little more of this later in this chapter. Nevertheless, these assumptions remain the workhorses of neoclassical economics.

Now, before we dismiss this characterization of the firm as unrealistic and out-of-step with the modern world, there remains an open question: do these assumptions contain a *good enough* representation of economic reality to make them viable and useful? (Few people would say they are a perfect representation, not even neo-classical economists.) Here, as elsewhere, we must be careful to avoid the Straw (wo)Man Argument. This is what Milton Friedman had to say about Marshall's conception of the firm:

Marshall's apparatus turned out to be most useful for problems in which a group of firms is affected by common stimuli, and in which

the firms can be treated *as if* they were perfect competitors. This is the source of the misconception that Marshall ‘assumed’ perfect competition in some descriptive sense.

(Reprinted in Friedman, 1953)

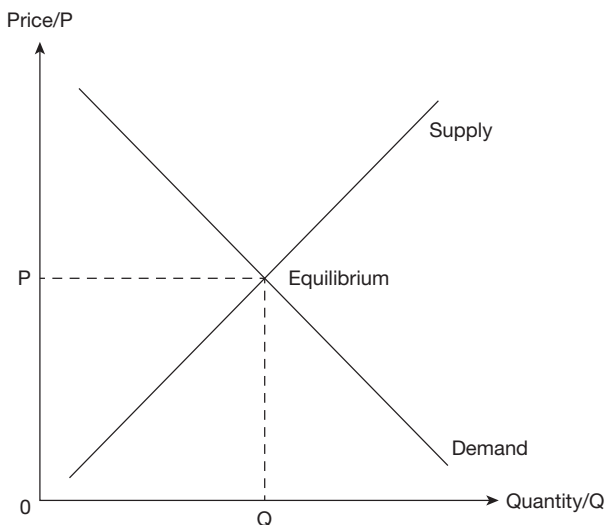


Figure 3.1: Supply and demand

Source: adapted from Marshall, 1890, Figure 19

THE CONSUMER

The neoclassical conception of the individual consumer, *homo economicus* (ECON), has a set of definite characteristics that resemble those of the firm (see text box). Instead of seeking to maximize profit, the individual consumer is seeking to achieve maximization of their satisfaction, happiness and welfare (i.e., utility). The individual consumer is assumed to have a set of consistent preferences, which means they can order their preferences for certain goods – do you prefer cream cakes over apples or apples over cream cakes?

As mentioned elsewhere and well worth repeating, these strict assumptions are often ‘relaxed’ to deal with reality, but for neoclassical

THE CONSUMER AND ALTRUISM

Homo economicus is assumed to be perfectly rational and selfishly motivated. In the same way that it would be irrational for a firm to assign their profit to another firm, the consumer cares only about maximizing their own utility in consumption and when they show regard for the utility of other people this cannot be at the expense of their own. To the extent that they do care about the utility of others without any corresponding increase in their own utility (e.g., as shown by altruistic behavior), they are said to be ‘non-rational’, even ‘irrational’. (However, it can be argued that in some – maybe most cases – the mere act of behaving altruistically increases utility by evoking good feelings). The notion of the ‘consumer’ can be extended to all areas of life (e.g., friendships and romantic relationships).

economics to work it must assume that, *to a sufficient extent*, people conform to these characteristics, especially when they behave in the market context with ‘real money on the table’ – this could be actual money or something else of importance to the individual consumer (e.g., romantic attachment). In this context, it may be said that when people are properly incentivized to optimize choices and maximize their utility, then their latent preferences will be ‘revealed’ in their choice behavior. While there will be gross failure by individuals – “There’s nowt so queer as folk” – the aggregate behavior of market participants is assumed to conform well to these characteristics.

The fact that these assumptions are not *really* a reflection of reality does not trouble the neoclassical economist. They say that less-than-perfect models are better than no models at all – if nothing else, such rigorous mathematical modelling allows deviations from neoclassical predictions to be quickly spotted: behavioral economists have found this realization most reassuring.

MARSHALL AND MARGINALISM

As we delve deeper into what is meant when we talk about neo-classical assumptions and principles, and especially when we consider

the notion of ‘rational’ behavior, we will quickly grasp the importance of *marginalism*, which applies equally to firms and individuals (we already encountered it in Chapter 2). Marginalism is seen to be important because it shows that economic efficiency (an important part of rational decision making) is always to be obtained at the margins of activity. This is said to apply to all decision-making situations (e.g., relationships), and not just ones of an explicitly economic nature.

To illustrate marginalism, a firm producing a wicket *should* (note the ‘normative’ tone) increase production to the point where the *marginal* cost of production (i.e., the cost of making one *extra* wicket, e.g., £1.00) is equal to the *marginal* return from selling the additional wicket (i.e., £1.00) – when the marginal return is £0.99, extra production should cease as a marginal unit loss of £0.01 is incurred. (Remember that in the jargon of economics, *marginal* refers to one additional/one extra unit.) This reasoning provides a useful way to think about how many wickets a firm should produce; and it is not an unhelpful way to think of the decision making of the individual consumer: we should stop consuming when the (usually psychological) costs outweigh the benefits. We can even turn this around and say we should stop *producing* (e.g., investing in a relationship) when the marginal return has turned negative, where marginal cost is now greater than marginal benefit. In this way, it would be a mistake to average costs and benefits over a longer time frame, which we typically do in personal relationships – we forgive, but less often forget, marginal transgressions! (Obviously, there is a time frame over which marginal costs/benefits are considered, and this may well differ from person to person.)

Marginal utility is a fundamental concept in neoclassical economics, and it is indeed a useful way to think about economic activity – that is, the most efficient allocation of scarce resources (be it making wickets or allocating time to leisure pursuits). The law of *diminishing* marginal utility says something especially important: the more we consume of something – for example, food or talking with friends – the less utility we are likely to get from each extra (marginal) unit of consumption. There often comes a point where we have ‘had enough’ and each additional unit no longer brings added pleasure. That is, where we are better off stopping,

or reducing, one behavior and switching to another that has a higher level of marginal utility. This makes good sense.

To put things slightly differently, the doctrine states that we should continue eating cream cakes until the additional bite does not produce marginal (i.e., extra) utility (pleasure) – a point might even be reached when the marginal utility is negative (i.e., disutility: “no more, *please!*”). More formally, we should continue to consume until marginal utility equals marginal cost. This is an example of the law of declining (diminishing) marginal utility, we encountered in Chapter 2.

So compelling is this idea that when an individual violates it, we are inclined to say they have ‘a problem’. For example, excessive game playing, Facebook use or pathological behavior (e.g., an addiction to gambling): these are almost defined as entailing the absence of declining marginal utility (or at the very least, the affected individual does not notice when marginal utility turns into marginal disutility). However, things are not quite straightforward. We may have a very strong preference for something (e.g., cream cakes) and by consuming them we are maximizing utility – ‘a problem’ would be identified if we were neglecting other aspects of our life (e.g., job, family, etc.) in the exclusive pursuit of this one guilty pleasure (the opportunity cost of the chosen action comes into play here). Although few of us would think that eating cream cakes all day long was a desirable (and certainly not a healthy) thing to be doing, neoclassical economics tells us that it is the individual’s preference and it is for them to decide how they want to maximize their utility – this attitude embodies the liberalism of John Stuart Mill we discussed in Chapter 2. For who is to say what is better, *in neoclassical terms*: a short, fat or long, thin life?

CONSISTENT PREFERENCES (BETWEEN OUTCOMES)

There are a number of other assumptions (or ‘axioms’ – a word that adds a certain gravitas) regarding preferences – our wants and desires that motivate our choice behavior. These assumptions form an important part of rational choice theory which underpins the

behavior of the ‘rational agent’ in economic models. The major one relates to people knowing what they want, and, importantly, they must be *consistent* in their preferences for certain outcomes. These preferences should not jump around, for example, being heavily influenced by how outcomes are communicated, or ‘framed’ (see Chapter 4). This assumption implies that we all know, at some level (but not necessarily consciously, as preferences are said to be *latent*), what we want.

The first axiom, called *completeness*, states that a consistent set of preferences can be arranged in an ordering system. In other words: if given several options, we know which option we prefer. It is fine if people are indifferent to two or more options, but they are generally able to rank all available choices (preference ordering).

1. **Completeness:** the consumer is able to rank all possible combinations of goods and services. We might prefer Oranges (O) over Apples (A) over Lemons (L). To show this ordering of preference, we write:

$$O > A > L$$

So far, so good; next we need to consider how these preferences relate to each other in a somewhat more complete way. A second important axiom in rational choice theory does just that.

2. **Transitivity:** for any three bundles O, A, and L, if we prefer Oranges to Apples and prefer Apples to Lemons, then we *must* always prefer Oranges to Lemons – not to adhere to this transitivity would seem plain silly and economists would label such behavior as irrational. However, it is relatively easy to see how this axiom is violated, for example as in the ‘Allais paradox’ (see below) and the effects of framing (see Chapter 4) information in different ways.

There are three other assumptions that are less relevant for our discussion, but we need to know they exist: *More-Is-Better*: other things being equal, more of a good is preferable to less; *Continuity*:

small changes in a bundle of goods should not lead to a jump in preferences; and *Convexity*: mixtures of goods (averages) are preferable to extremes.

RATIONALITY

Consistent behavior based on *consistent preferences* is a key aspect of neoclassical economists' definition of *rational behavior*. It is important for us to know what it means in neoclassical economics – for one, it does not refer to certain behaviors that we might otherwise label 'rational' (e.g., sensible behavior such as helping others at some cost to ourselves; i.e., true altruism). In neoclassical economics, rationality mostly refers to the utility-maximizing, consistent behavior of self-interested *homo economicus* (ECON) who focuses on own personal utility, and *now*. (As we see in Chapter 5, rationality can be defined in other ways; e.g., it might well be 'rational' to cooperate with others in order to derive some future benefit, but this future-oriented form of rationality is *not* the definition in neoclassical economics and its notion of *homo economicus* – if there were ever a word that has led to so much confusion, it must be this one.)

In addition to self-interested here-and-now choices, there are other elements of the neoclassically defined rational behavior of *homo economicus*, which reflect some of the assumptions and principles we have described above.

1. We should always think at the 'margins' of choices – that is, what changes will an additional action bring? In particular, weighing the costs and benefits of a choice at the margins is said to produce the maximum utility (also known as 'welfare').
2. This first principle is related to the idea of 'sunk costs', which neoclassical economics tells us we should not take into consideration when making choices at the margin – as the old saying tells us, there is no use 'crying over spilled milk'. This is simply because a sunk cost has already been incurred and cannot be recovered. *Prospective* costs are what really matter, as these have not yet been incurred and will depend on the choice made. But, as we will see in Chapter 4, people tend to consider sunk costs

- because they are *loss averse* – also, from a psychological perspective, sunk costs may tell us something about our mistakes and this is important in modifying our future behavior along more appropriate lines (i.e., utility maximizing in the medium to long-term – but, as seen above, this is *not* being rational in neoclassical terms).
3. Opportunity costs need to be considered when conducting a cost-benefit analysis in any given choice situation – what alternative courses of action, and associated utility, have we *foregone* in making *this* choice? (We have already encountered this concept in Chapter 2, and seen an example of it in the case of New York City taxi drivers in Chapter 1.)
 4. We should respond appropriately to incentives that affect marginal costs and benefits. Increases in marginal benefit should mean more of the activity, whereas increases in marginal costs should mean less of the activity. This is consistent with the ‘matching law’ of behavioral psychology which shows that even simple animals allocate their behavior over different choice options in a way that maximizes their total reward, and thus their utility (e.g., pigeons pecking at disks which have different reinforcement values attached). It is for this reason, that government may tax products to lower consumption (e.g., the sugar tax).

PEOPLE ACT ON THE BASIS OF FULL AND RELEVANT INFORMATION

In addition to all of the above, something else is important in neoclassical economics. It is assumed that for people to behave in a rational manner (as defined above), they must have access to full information and they must process this information in an unbiased way. We will see in the following chapters the multiple ways people’s use of information can be influenced by context, past experience and framing of the question/problem: how information processing is biased. But for now, to appreciate this assumption, we do not need to assume that people are perfect computers because clearly they are not (remember the bat and ball problem; see Chapter 1), and this, as with related assumptions, can be ‘relaxed’. But such relaxation cannot go too far: the neoclassical muscles that do the hard-analytical

lifting must stick to the claim that, *to the best of their ability*, people process relevant information in a rational way to satisfy their preferences and they manage to do so to a good enough extent. What they cannot be is systematically biased in their processing (or, indeed, selection) of relevant information – to the neoclassical mind, this would be nothing less than a slippery conceptual slope into intractable and non-rational ideas of no value in formal economic modelling.

THE POINT OF IT ALL: UTILITY MAXIMIZATION

All rational behavior is aimed at maximizing utility – satisfaction, happiness, benefit or pleasure from certain outcomes. Given this definition of utility, any rational person would want to maximize their happiness. This seems straightforward enough and to want to do otherwise would seem foolishly self-defeating. To see what this is about, take the example of the total utility from a night out on the town with friends. Now, the first thing to note is that the possibilities for total utility are limited by budget constraints: you do not have all the money in the world to spend. Let us say you have £100. Given your preferences, how will you allocate your resources (£100) among the possible options open to you: buying drinks, having a meal, paying to enter a club, getting a taxi home? You would be a fool indeed not to try to maximize your happiness, after all that is the point of a night on the town – but to achieve this desired end, you will want to allocate your resources most efficiently to maximize your total utility (e.g., not having money for transport home and no other resources to get there, for example, a friend's car, will impair total utility). You will, of course, need to take heed of diminishing marginal utility for any one good (see above – too much of a good thing, and all that). Well, if you are an example of *homo economicus* – and you may well not be after a few drinks! – you will rely upon some formal logical system to compute the marginal utility associated with your choices. Your aim is to maximize your total utility and the way to do this is to apply principles and procedures of *expected utility theory*, which is another major workhorse of neoclassical economics.

EXPECTED VALUE/UTILITY THEORY

The dominant (neoclassically-defined) rational approach to calculating utility is expected utility theory. It assumes that the logically consistent person has definite preferences, but it recognizes that decisions are made with an element of risk or uncertainty – the difference between risk and uncertainty is that the probability of a risky outcome occurring is known, which is not the case for uncertain outcomes (see text box). However, not all is lost in uncertain situations because we still may be able to assign (subjective) probability values to likely outcomes. For example, although it is sensible to save for retirement (who wants to be old *and* poor?), our future income is uncertain, and we may not live long enough to enjoy our retirement savings (*note*: life expectancy is more of a risk because we can calculate the probability of reaching a given age – actuarial science is devoted to this very topic). Firms face a similar problem: in the face of uncertain demand, how should they decide which products to develop and which prices to charge? And how should government set levels of taxation and expenditure when the growth of the economy, inflation, and so on are all uncertain?

RISK VS. UNCERTAINTY

Risk can be calculated from known probabilities. For example, what is the probability that if you tossed a fair coin it would come down heads; easy! This should happen half of the time (0.5), if the coin is indeed fair. Risk relates to situations where it is possible to assign probabilities to each outcome occurring (and can be insured against). Uncertainty is a different thing, as it often concerns future events which are difficult to predict and we therefore do not have a profile of probabilities: in this case, we simply do not know. Indeed, uncertainty relates to situations where assigning probabilities is little more than guess work. We can think of many examples when this is the case. Will it rain if you set your wedding date in June? Formal economic theory assumes that it is possible to assign probabilities, even if these are subjective – but sometimes, this is not possible (e.g., we may not be aware of all future outcomes).

The problem is: we need some systematic and logical system *even to start thinking about* the uncertain future.

In neoclassical economics, these calculations are formalized in mathematical models, based on the von Neumann–Morgenstern utility theorem. This theorem demonstrates how rational *homo economicus* may calculate how much utility can be expected, on average, from each choice – an important step in choosing the option that maximizes utility.

VON NEUMANN–MORGENSTERN UTILITY THEOREM

We should probably start off by saying that, although this is the gold standard of rational decision making in neoclassical economics, when applied to individual decision making its merits are not intuitively obvious – we will see its benefits, as well as its limitations.

But first we need to know that modern-day ideas of utility calculation can be traced to the collaboration of an economist (Oskar Morgenstern) and a mathematician (John von Neumann) who published a remarkable book in 1944, *Theory of Games and Economic Behavior* – they considered their ideas on utility rather secondary to their game theory work (we discuss game theory in Chapter 5). Von Neumann and Morgenstern proposed expected utility theory as a form of precise mathematical reasoning for use in all strategic structures governing rational decision making – this applies to all spheres of life, including economic, political and military (indeed, it can refer to anything, from optimal policy choices of presidential candidates, the arms race, public health policies, and competition between firms; and even romantic relationships).

In a nutshell, the von Neumann–Morgenstern utility theorem shows (in mathematical terms, ‘proves’) that, given a number of axioms (assumptions), a rational decision maker faced with risky or uncertain (i.e., probabilistic) outcomes of different choices should behave in a manner to maximize their ‘expected value’, or utility. Put somewhat differently, expected utility theory (EUT) requires the decision maker to make a choice between risky or uncertain outcomes by comparing the expected utility values of different outcomes. More formally, this expected utility is calculated by adding

the utility values of outcomes multiplied by their respective probabilities.

As this can be rather abstract, let us illustrate with an example. Consider yourself in the following position. You are presented with a gaming situation in which the probability of getting £100 is 1 in 80 (1.25% or 0.0125) and the other, more likely outcome is to get nothing (98.75% or 0.9875). The expected value of this gamble is £1.25 (we calculate this by multiplying the probability of outcome A occurring with the value of outcome A, and we then add the product of the probability of outcome B occurring with the value of outcome B: $£100 \times 0.0125 + £0 \times 0.9875 = £1.25$). Now, if you are presented with a second situation, this time with a guaranteed payment of £1 – this is also the expected value – expected utility theory says that the rational person *should* choose the £100-or-nothing gamble (the first scenario) and not the second with the lower expected utility value. Which gamble would you take? Many people opt for the guaranteed (‘sure thing’) £1 which, according to expected utility theory is *not* the rational choice. As we will see in Chapter 4, people who prefer the sure payoff of £1 are said to be risk averse.

CRITICISMS OF EXPECTED UTILITY THEORY

Expected utility theory is not without its limitations and critics. The first problem is that uncertainty is treated as an objective risk – we are ‘given’ the probabilities of different outcomes. But most decision situations in real-life do not come with a defined risk (e.g., who will be the next Prime Minister of the UK?) (The election of President Donald Trump in 2016 defied the vast majority of pollsters, political analysts and the rationality of bookmakers.) Such situations demand that we come up with our own *subjective* estimate of the outcome – but this is likely to be influenced by a range of factors, including how favorable or unfavorable the different outcomes appear to us (even perhaps the mood we are in on that day; see Chapter 5). However, perhaps this is better than nothing, yet it can be very misleading, producing over-confidence especially when agreed upon by others.

Savage (1954) addressed the fact of real-world decision making. He argued that if we treat subjective probabilities as if they were *objective*, then the expected utility model holds true. To take an example, no one can know the true ('objective') probability of the political party that will form the next British government, but we can make a guess of this ('subjective') probability. However, a limitation of this approach, which is often ignored in economic analysis, was noted by Savage himself, when he cautioned that his theory was intended only for 'small worlds' where all possible states are imaginable and knowable. But many important problems, for example, possible outcomes of global warming, belong to 'large worlds' where it seems improbable that the decision maker could delineate all possible states of the future world and, therefore, generate sensible probability values on which to base expected utility theory.

Savage's subjective probability approach, itself, has another limitation. It applies to a single person. With two people, expected utility could be different because they have different subjective probabilities. But in economic modelling it is standard practice to assume that if people have access to the same information then they will come to the same subjective probabilities – this is known as the *common prior assumption* – but this is unlikely in the real world where personality differences are likely to affect perceptions and judgements of the probability of outcomes (see Chapter 5). The common prior assumption, which is important in Bayesian reasoning assumes that differences in judgement, opinion, and so on, reflect differences only in information.

Bayesian reasoning is a powerful and widely-used form of statistical inference, in which probabilities of an outcome occurring are updated as more information is obtained (it is based on Bayes's theorem, which is named after Reverend Thomas Bayes who published work on conditional probability in 1763). But, when it comes to testing these assumptions, empirical studies show how we fail to account for 'prior' probability and *base-rate* information (see text box).

Another criticism of expected utility theory is that it is unrealistic to expect the average person – perhaps even the above average

BAYESIAN UPDATING

Imagine the following. You are presented with three cups, under one of them (let us make it interesting) there is £1,000. You have to guess which one. Now, imagine someone else (who has full information about the cups) chooses a cup and turns it over to reveal that the £1,000 is not under it. Now, the *state* of the world has changed: there are only two cups remaining. You are then asked: “do you want to change the cup you first chose?” You might say, “Not really, as I now have a 1 in 2 (50%) chance of being right”. According to Bayesian reasoning, this is *not* the right choice to make, because it would ignore the fact that the other person, who knows where the prize can be found, has deliberately not chosen the other cup; thus, there is now more information available about that cup. The logical thing now to do is to switch: *always!* (It may not feel like the right thing to do and if you do not accept this conclusion – and we agree it does not *seem* correct – you are not alone. This is also known as the Monty Hall problem, a popular probability puzzle for economics students.)

neoclassical economist – to engage in this form of computation, and indeed it seems that to do so is the exception rather than the rule (e.g., see the Allais paradox, below).

Well, let us take another look at the expected utility problem, presented above. Is the choice of accepting a gamble with an expected value of £1.25 rational, preferable, or better than a sure amount of £1 *when* there is only a 1.25% chance of obtaining any money? Our tendency to avoid risk and prefer the ‘sure thing’ is, then, disparaged as violating expected utility theory and not being ‘rational’. Several things seem relevant here. A guaranteed £1 may be seen to be better (indeed, more ‘rational’, albeit not in a strict neoclassical sense) than a highly improbable £100, especially if £1 represents a large proportion of one’s wealth (add zeros on to the numbers if this improves realism for you).

Secondly, as any real-world gambler knows, often to their actual cost, a probability of a 1 in 80 outcome occurring (e.g., a horse winning a race) may not come about any time soon, and the gambler

could go bankrupt before they realize the wisdom of relying on expected utility theory. Here we have the problem of short-term and long-term outcomes. Let us test this assumption now: take a coin and toss it 10 times. We did this and got the following run: TTHHTHTTHT (7 tails). We would be more confident to get something close to 50/50 heads and tails if we tossed the same (unbiased) coin millions of times (we will leave this to someone else!). As any real-world gambler should know, the short-term can destroy wealth, even if in the long-term everything turns out as predicted by expected utility theory – assuming we got our subjective probabilities right in the first place.

A similar point was made by John Maynard Keynes in his 1923 book *A Tract on Monetary Reform*: “But this *long run* is a misleading guide to current affairs. *In the long run* we are all dead.” To survive and thrive, apparently (neoclassically defined) ‘irrational’ decisions may turn out to be very rational! And as many bankrupted stock market investors have learned to their considerable cost, as Keynes noted: “the market can stay irrational longer than you can stay solvent.” Keynes wrote these words not as a desk-bound academic but as a trader in foreign currency who after a large win suffered a severe loss. Without the experience of gambling one’s own money – having ‘skin in the game’ – it is appealing for academics to extoll the virtues of expected utility theory. (We may well wonder how many of those who advocate the use of expected utility theory test the theory with their own money?) In his 2008 book, *Predictably Irrational*, Ariely quotes a Harvard University economics professor, Al Roth, as saying: “In theory, there is no difference between theory and practice, but in practice there is a great deal of difference”.

However, in defense of expected utility theory, neoclassical economists accept that, although individuals may struggle with calculating and implementing it, when the aggregate behavior of people is considered there is evidence that it is a useful notion. In addition, such economists prefer a logically viable system over none at all, and certainly over ones that emphasize non-rational processing. This is important for neoclassical economics, which has a vast theoretical superstructure built upon the basis of a small number of tenets,

assumptions and principles. The extent to which the whole structure works provides some defense of its foundations – this point is discussed below in the context of Milton Friedman’s ‘as if’ argument.

In closing this section, we may note that the three neoclassical assumptions (i.e., rationality expressed in the form of consistent preferences, utility maximization, full and relevant information), and how they are combined in expected utility theory, allow the neoclassical economist to build an elegant and mathematically rigorous theoretical system to explain the allocation of scarce resources among alternative ends. Such is the application and generalization of these three principles, neoclassical economics has been applied to a wide range of economic activity, sometimes very broadly defined. For example, the University of Chicago-based neoclassical economist Gary Becker extended this thinking into sociology, including understanding racial discrimination, crime and drug addiction. Mainstream economics is not without its applications and successes, but as we see next it is also not without its limitations.

EMPIRICALLY CHALLENGED: PREFERENCE REVERSAL

We have seen that consistent preferences are at the heart of neoclassical thinking, and we have also been told that such preferences should not be blown around on the winds of context, framing of the problem, mood, and so on (the list can get long). But, is this the case? As explained by Tversky and Thaler (1990), one especially perplexing, and certainly most troubling, finding for the neoclassical approach is, so-called, ‘preference reversal’. This is shown by different examples; one of the most compelling of these is the Allais paradox (see text box).

Let us take another, simpler, example. Consider the following two bets. Which one do you prefer?

P bet: 29/36 probability to win £2

£ bet: 7/36 probability to win £9

We need to note that the expected utility of the £ bet is higher and rational individuals should, therefore, always choose the second

THE 'ALLAIS PARADOX'

This is the best-known example of preference reversal – it is named after Maurice Allais (1953). Try for yourself the following set of choices. You are asked to choose between two sets of gambles:

Gamble 1:

Choice 1A: 100% chance of receiving 100 million.

Choice 1B: 10% chance of receiving 500 million, or
89% chance of receiving 100 million, or
1% chance of receiving nothing

Most people prefer 1A although this safer choice does not yield the higher expected utility (see above).

Gamble 2:

Choice 2A: 11% chance of receiving 100 million, or
89% chance of receiving nothing

Choice 2B: 10% chance of receiving 500 million, or
90% chance of receiving nothing

Most people prefer 2B, reflecting higher expected utility even though it is a riskier choice. If expected utility theory is true then the preference $1A > 1B$ should imply a preference for $2A > 2B$. However, the experiment shows that most individuals prefer $1A > 1B$, *but* $2A < 2B$. We seem to place more weight on the difference between 100 and 500 million, and much less on the difference between 89 and 90%. However, this might not be a great example – although it is one very widely cited in behavioral economics – because who among us can *easily* calculate the expected utility of these choices?

gamble (Unlike *homo economicus*, you are probably not able to easily calculate $29 \div 36 \times 2 = 1.61$ and $7 \div 36 \times 9 = 1.75$ in your head and conclude that the second gamble provides the higher expected utility of 1.75 – however, note that the denominators are the same in both calculations so we can simply compare 29×2 to 7×9 and conclude that 58 is smaller than 63.) Lichtenstein and Slovic

(1971, 1973) and Tversky, Sattath and Slovic (1988) found that people *choose* the P bet but are willing to *pay* more to obtain the £ bet. This behavior is not rational because whether to choose a bet or pay for it is just a matter of framing the same question differently: which bet do you prefer? What they find is, people seem to prefer the P bet because the probability of winning is higher, but then seem to prefer the higher value of the £ bet. Slovic (1972) called this outcome the ‘compatibility effect’, according to which people who evaluate a gamble tend to rely on the monetary aspect of it when a value is expressed in terms of money, even when they have no particular reason to set the value of the gamble based on the monetary aspect. This compatibility effect can turn people into ‘money pumps’: people purchase and trade gambles in such a way that they are bound to lose money. Companies can frame choices to exploit this effect (see Chapter 7).

The above gamble shows that preferences are influenced by the *procedure* used to elicit them. According to the neoclassical concept of rationality, this simply should not happen as it violates the assumption of ‘procedure invariance’: preferences should be stable irrespective of how they are elicited. This observation is yet another example of Richard Thaler’s Supposedly Irrelevant Factors (SIFs; see Chapter 1). In Chapter 4, we will see further examples of how easily this assumption is violated.

INTERTEMPORAL CHOICE

Another example of *preference reversal* is seen when we make choices distributed over time – this is the field of *intertemporal choice* (a good overview can be found in Berns, Laibson & Loewenstein, 2007). It is about how we value ‘now’ and the ‘future’. By their very nature, all outcomes of interest have yet to happen: they belong to the future. Therefore, choices over time are important. To give an example, if we offer people the choice to receive £100 either today or in one week, most will choose the immediate reward because they attach more value to it – in other words, they *discount* the future reward and value it less than £100 received now (it is for this reason that banks pay interest on deposits – inflation and uncertainty play a

large part). This choice may be obvious; however, it is less obvious when individuals are asked to choose between £100 today and £110 in one week. Depending on how much people discount the future sum, they will either pick the smaller-sooner-reward or the larger-later-reward. In experiments, many individuals prefer the smaller, immediate reward, which is an expression of ‘present bias’ – I want it now! Things get a little more interesting when the one week delay is at some point in the future: most respondents will gladly wait an additional week if the same choice is presented as: £100 in 50 weeks or £110 in 51 weeks? People are more impatient about a one-week delay when immediate gratification is possible. What this shows also is that our ‘now’ preference reverses as a function of time. All very irrational in neoclassical economic terms!

The neoclassical economic view is that the trade-off between consumption now versus one week from now should be the same as the trade-off between consumption in 50 weeks and in 51 weeks – it is the same delay in both cases – but this is not how most of us see things and we treat these same periods of time differently. (Once again, we have to assume that all else is equal, for example, expected inflation or changes in interest rates are not confounding factors.)

What such studies reveal is that we do not discount the future at a constant rate. *Exponential* discounting makes most sense to neo-classical economists because it assumes a constant rate of discounting and periods of time are treated equally. But people do not conform to exponential discounting; instead, they engage in *hyperbolic* discounting which is characterized by much steeper initial discounting which flattens as time moves into the future. The preference reversal we described above – where the choice between two outcomes (£100 now or £110 one week later) changes when the choice is moved to the future – can be explained by hyperbolic discounting.

BOUNDED RATIONALITY

It has long been recognized that the ideal image of *homo economicus* (ECON) is not reflected in typical economic behavior. This observation is not new. This fact led Herbert Simon in the 1950s to suggest that we have, what he called, ‘bounded rationality’ (Simon

1955, 1957). This refers to the limitations to our ability to process information in an optimal (fully rational) manner. However, although we may not reach the heights of perfect rationality (as defined above), we may still be ‘procedurally rational’ (Barros, 2010): we are doing the best job possible under (cognitively and emotionally) difficult conditions. Simon also argued that we are content to arrive at lower-than-optimal utility which he called *satisficing* – this is a portmanteau of ‘suffice’ and ‘satisfying’. But, again, this might be quite (in a looser sense) rational because it means we avoid the disutility associated with further effort expended, self-control, information search, and so on.

It is interesting to learn that Simon’s ideas on *bounded rationality* and *satisficing* came out of the marginalist debate of the 1930s which showed that it is not the case that entrepreneurs follow the marginalist principles of profit-maximization/cost-minimization – they can get by on a less-than-perfect solution. Given the complexity of information and uncertainty, and the demands of complex computations, most of us are perfectly content to make decisions that are not optimal as defined in mathematical terms, but that are good enough to provide a sufficient degree of happiness, pleasure and well-being – as well as relief from all the hard work needed to strive for perfection!

JUSTIFYING NEOCLASSICAL ASSUMPTIONS AND PRINCIPLES

Given the limitations of HUMAN decision making, as revealed by the examples above and further detailed in Chapter 4, where does all of this leave us with regards to justifying neoclassical assumptions and principles?

Along with Leonard Savage, the famous free market economist Milton Friedman put forward an argument in 1948 to defend neoclassical economic assumptions, and this has been repeatedly used since the 1950s (we have already seen his justification of Marshall’s theory of the firm above and here we examine his justification of the rational individual consumer). The argument goes that, *of course*, people are not perfectly rational and not all can make lightning fast

calculations – some of us are plain dumb. But, it is further argued, when the ‘chips are down’ and we are sufficiently incentivized and motivated, to the best of our ability, we behave ‘as if’ we were using the rational principles described above. Furthermore, Friedman claimed in 1953 that economic theories should neither be assessed by their descriptive realism nor by their ability to account for psychological processes, but by the criteria of whether they are “sufficiently good approximations” of the world and “whether the theory works” in terms of leading to “sufficiently accurate predictions”.

Friedman and Savage defended their ‘as if’ argument with the example of an expert billiard player. They say that it is not unreasonable to accept the hypothesis that the billiard player makes shots ‘as if’ they knew the complicated mathematical formulas governing the direction of travel, angles, speed, and so on – the fact that this is not done consciously is irrelevant. (We shall have reason to turn to the issue of conscious processing and free will in Chapter 5.)

Whatever the truth of all of the above, what distinguishes behavioral (and more generally experimental) economics from neoclassical economics is the lesson from psychology which stresses the value of testing hypotheses rather than just assuming that ‘axiomatic’ assumptions are inherently true, or useful (even if not entirely true) – this is now routine research practice (Vernon Smith shared the Nobel Prize with Daniel Kahneman for his pioneering work in *experimental* economics). In any case, in deciding between alternative theoretical positions, Milton Friedman is surely right when he declared: “theory is to be judged by its predictive power for the class of phenomena which it is intended to ‘explain’”.

In this way, the predictive power of neoclassical economics (and, of course, behavioral economics) needs to be judged. *Prediction* of the future is the gold-standard of a scientific theory; *postdiction* of the past is the lead-standard.

HETERODOXY

As we have now seen, much is made in neoclassical economics of the free market, the nature of the firm and that of the consumer –

although these are clearly idealized notions, they are intended to explain important economic phenomena. But as discussed in Chapter 2, there is much dissent over these issues. J. K. Galbraith (1958, 1967) noted that “the market” of modern society is no longer made up of numerous small firms, competing with each other and complying with the laws of supply and demand. Instead, today there are multi-billion dollar global conglomerates who can, and do, influence the demands of the consumer via advertising, brand management, and indeed by self-perpetuating fashion and resulting peer pressure (these highly expensive ploys also prevent entry into the market by potentially more innovative and competitive firms). Of course, companies have to provide goods and services that are within the consumer’s ‘zone of tolerance’, but we may assume this to be fairly wide – the ridiculous (seemingly psychoanalytically informed) styling as well as the name of the Ford Edsel of the late 1950s showed the limitations of even the largest corporation to persuade the consumer to buy any product.

Galbraith further noted that many commercial firms are funded by government and military sources, especially in the USA, something which he termed the ‘military-industrial complex’, adopting the phrase from US President Dwight D. Eisenhower’s farewell address in 1961. Galbraith also observed that while CEOs may be praising the wonders of the ‘invisible hand’ of the free market they may, at the same time, be lobbying government for subsidies and trade tariffs to protect their companies from ‘unfair’ global competition.

Galbraith lampooned the notion that the modern firm is merely seeking to maximize profits (or some other shareholder related value); instead, it may be seeking to maximize the utility of the management in the form of high salaries, generous bonuses, tax-free luxury cars, and the like, which comes of course from having great products and services. Is it *really* the case that non-shareholding managers work, plan, innovate and invest merely to maximize the profit of people they do not know? This would *truly* be altruistic – and not really consistent with neoclassical economics’ own tenets. Galbraith presented us with an amusing metaphor: “. . . of a man obsessed by sex who devotes his life to enhancing the sexual opportunities of

other people whom he has not met.” If we prefer to take our economic lesson not from a staunch liberal economist but a titan of the business world, we hear much the same: in 2009, Jack Welch, former CEO of General Electric, asserted that this is “the dumbest idea in the world”, adding “shareholder value is a result, not a strategy”. (Quoted in Guerrera, 2009.)

THE DAWNING OF BEHAVIORAL ECONOMICS

In addition to the dissenting voices of economists, simply too many behavioral anomalies accumulated to suggest anything other than that, at the very least, core neoclassical economic assumptions need reconsideration and, at least, some refinement, if not wholesale renewal. This pressure came about at around the same time in the 1960s when psychology was experiencing its own revolution with the advent of cognitive psychology. This placed emphasis upon ‘mental’ processes and argued that focus exclusively upon overt (‘revealed’) behavior and how it is affected by reinforcement (e.g., incentives) is a major shortcoming. In particular, the mind came increasingly to be seen as an information processing machine – the development of computers was a major technological impetus to this view. Now, once we start to think about processes as memory, language and decision making, a whole landscape of intriguing possibilities opens up. These only increase when we add social psychology which views individual thought, feeling and behavior as socially constructed and shaped. The intellectual flood gates started to open, slowly at first but then a fully flowing tide washed away many of the old assumptions that seemed so water-tight not too many years before.

Despite strong resistance, which continues to this day, standard neoclassical models would never be quite the same again. Amos Tversky and Daniel Kahneman, in particular, proposed radical new ideas and provided compelling empirical evidence to show some remarkable findings. In 1974, their *Science* article proposed that we use mental shortcuts – something they called ‘heuristics’ – when making judgements (these are detailed in Chapter 4).

Tversky and Kahneman noted that typical human judgements deviate markedly from rational decisions and that we are systematically biased. The influence of this 1974 article was added to in 1979 when they proposed 'Prospect Theory' to explain decision making under risk. This work demonstrated significant violations of standard economic models (e.g., expected utility theory). Importantly, Tversky and Kahneman provided a theory that could be *tested* and, if shown to be wrong, disregarded – the fact that we are still talking about it today attests to its success. Their paper was published in a highly influential journal, *Econometrica*, written in the style favored by economics, and contained enough mathematics to give it a respectable academic gloss: it could not easily be ignored – although many dyed-in-the-wool neoclassical economists gave the impression that they had achieved this feat of self-denial. By 1997, some kind of acceptance was seen with the publication of a special issue of the journal, *Quarterly Journal of Economics*, devoted to behavioral economics.

As noted by Camerer and Loewenstein in 2003, these early papers set the tone for those that followed. The first task was to identify normative assumptions or models widely used by economists (e.g., rationality). The second task was to identify deviations from predictions by clear and unambiguous empirical findings – of course, to win acceptance, this means ruling out alternative explanations that are consistent with neoclassical assumptions (e.g., participants in the studies were confused or they were insufficiently incentivized). Once these two tasks had been achieved, the next step was to formulate alternative theories to replace the flawed neoclassical ones; and, lastly, to construct new economic models and propose how they should be tested. The idea is not only to account for the failure of neoclassical economics, but to generate new knowledge by applying novel concepts from behavioral science.

Some of the leading figures in early economics anticipated as much. It is appropriate that Richard Thaler opens his 2015 book, *Misbehaving*, with a quote from Vilfredo Pareto (1906):

The foundation of political economy and, in general, of every social science, is evidently psychology. A day may come when we shall be

able to deduce the laws of social science from the principles of psychology.

That day has arrived.

CONCLUSIONS

Neoclassical assumptions and principles have enjoyed a remarkable success over the past one hundred years. Economists trained in this tradition are much sought after by government and business alike. Students of economics are highly employable because they have been taught to think in systematic and logical ways, and this analytical rigor can be applied to all types of problems.

In all of the discussion of the virtues and vices of neoclassical economics, the important issue, as Milton Friedman pointed out, is the extent to which people conform to a good enough approximation of rational *homo economicus*. But, as behavioral research shows, in many specific respects, the neoclassical economic approach seems in need of modification to include newer empirical findings and a more psychologically realistic understanding of them. We turn to this topic in the next chapter.

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HUMAN MORE HOMER (SIMPSON) THAN *HOMO ECONOMICUS*

INTRODUCTION

Previous chapters revealed the roots of behavioral economics are deep in the history of classical economic thinking. We saw also how more recent dissenting voices (e.g., J. K. Galbraith) anticipated some of the themes that occupy the field of behavioral economics today (e.g., the degree of rationality of the consumer and the power of consumerism – this is explored further in Chapter 7). Much is now known about how people *actually* form judgements and make decisions, which is the topic of this chapter. Among other things, we see the importance of (psychological) *context* over (informational) *content*. Far from *homo economicus* (ECON), we often seem closer to *Homer* (Simpson) *economicus* (HUMAN) – or, if we prefer, *homo psychologicus*.

We start with a survey of what many consider to be the most important finding in the whole of behavioral economics: loss aversion. It is a useful starting point because it helps us understand the psychological nature of other economic phenomena. In addition, its influence is seen across many different domains, and it forms a central part of the major alternative perspective to neoclassical economics that we discuss later in this chapter: prospect theory.

LOSS AVERSION

Loss aversion is certainly one of the best-known phenomena in behavioral economics (an overview of loss aversion and some of the other anomalies described in this chapter can be seen in Kahneman, Knetsch & Thaler, 1991). It was elegantly articulated by the famous economist, Adam Smith, in *The Theory of Moral Sentiments*:

Pain [. . .] is, in almost all cases, a more pungent sensation than the opposite and corresponding pleasure. The one almost always depresses us much more below the ordinary, or what may be called the natural state of our happiness, than the other ever raises us above it.

(Smith, 1759)

Adam Smith already described in 1759 what Tversky and Kahneman would re-discover more than 200 years later: losses tend to loom larger than equivalent gains (Tversky & Kahneman, 1984). In other words, the pleasure of gaining £10 is less than the displeasure of losing £10 – depending on how it is measured, the effect is estimated around twice as much. Charles Darwin said something similar to Adam Smith, only a little later: we value blame more highly than praise. When the potential of losing something is salient – and it so often is – loss aversion refers to the stronger tendency to prefer avoiding losses than achieving gains of the same magnitude. However, despite the central role it plays in behavioral economics, the appearance and strength of loss aversion seem very much to depend on how the feelings of loss are elicited – another manifestation of the lack of method invariance in economics. Under certain circumstances (e.g., when the loss is not made salient), loss aversion can be lower or, even, non-existent – in fact, there is now much debate over the robustness and implications of the phenomenon (Gal & Rucker, 2018). In this way, it is also a good example of how context, framing and such like can influence judgement and decision making.

ENDOWMENT EFFECT

Well, how does loss aversion influence our everyday decisions? One good example is the *endowment effect*, a term first coined by

Thaler in 1980. This effect relates to the finding that we value the things we own much higher than the things we do not. For example, our house will always be worth more to us than to a potential buyer. The endowment effect is seen in people wanting to *sell* consumption goods at higher prices than they would be willing to *pay* for them. This was shown in a simple and elegant experiment by Kahneman and colleagues in 1990 using coffee mugs (see text box).

THE ENDOWMENT EFFECT – COFFEE MUGS

Imagine yourself in the coffee mug study (Kahneman, Knetsch & Thaler, 1990). The ‘sellers’ in this study were given a Cornell University coffee mug. They were asked at what price they would be willing to sell it. The ‘buyers’ in this study were asked what price they would be willing to pay for the coffee mug. These prices were very different. The median price for sellers was \$7.12, nearly 2.5 times the median price for buyers, \$2.87. In another study, of those given a choice to sell, 75% decided to keep the mug if the price was £3.12 on average. Merely owning a product seems to enhance its value: the explanation being that we are averse to the potential loss and we would prefer to keep possession of the coffee mug – there may also be a status quo bias in play, discussed below.

Another interesting form of loss aversion is seen in the ‘money illusion’. As noted in Chapter 2, even high-profile neoclassical economists sometimes find cause to scratch their professional heads in disbelief at the notions people hold about money. Irving Fisher (1867–1947) – called ‘the greatest economist the United States has ever produced’ – wrote about the *money illusion* (indeed, he devoted an entire book to the subject, published in 1928). The money illusion is the tendency to think of currency in terms of the numerical/face value (the nominal value; e.g., £1) rather than in terms of its purchasing power (the real value). The real value reflects how much of a good and/or service can be acquired with the money – this should be more relevant for consumers because of inflation. Think about what you can buy for £100 today compared to what your

grandparents could buy for £100 when they were your age. The money illusion is an early example of the use of a heuristic: nominal prices provide a rule of thumb for deciding the value of a good or service. Real prices, on the other hand, are not taken into consideration unless they are made highly salient – we tend to ignore the effects of inflation.

The money illusion can be seen in perceptions of outcomes. For example, generally we see a 2 percent cut in nominal income (e.g., wages) with no change in purchasing power (real value of income; i.e., what can be purchased with that income) as unfair – we would be taking home 2 percent less purchasing power. In contrast, we have no difficulty in viewing a 2 percent rise in nominal income as fair even when there is 4 percent inflation (which decreases real income) – again, we would be taking home roughly 2 percent less purchasing power. Despite the fact that these outcomes are, in rational terms, almost equivalent they do not *seem* that way to us and we have very different feelings and thoughts about them. Such results are consistent with the ‘myopic loss aversion’ theory, described by Benartzi and Thaler in 1995, which relates, as the name implies, a short-sighted greater sensitivity to apparent losses, but not to gains. In addition, as people are accustomed to getting (albeit in nominal terms) a pay rise and not a cut, the prospect of a cut is much more psychologically salient and attention is drawn to its apparent unfairness.

MONEY: MENTAL ACCOUNTING

Recall the discussion of money in Chapter 1. Money has the pleasing property of being *fungible* – it buys food and Fords. Also, recall the working patterns of New York City taxi drivers who work ‘one day at a time’. It appears that they have mental bundles of preferences: work, leisure, family, and so on. and, importantly, these are not interchangeable (i.e., fungible). There is something else peculiar about the psychology of money: *mental accounting* (described by Tversky and Kahneman in 1981). Think of the money in your pocket, in your bank account, in your investments, and even maybe money in the tin on the kitchen sink. Do you treat these bundles

of money equally? Probably not. Given the importance assigned to money, this is something that may baffle the neoclassical economist – although surely in their personal life they treat money in much the same fashion.

Most of us – however, apparently non-rationally – bundle our financial resources according to their intended purpose. For example, we may have a holiday fund, shopping fund, leisure fund, and so on – these are not interchangeable in psychological terms. The interesting thing is that we spend these funds, at least what appear to be, in inconsistent ways. For example, we may search the supermarket shelves to find value-for-money products, while on the same day we may not be the least concerned about spending another bundle of money on something of extravagance (e.g., an expensive restaurant meal). It seems that we are behaving inconsistently – but are we?

EXAMPLE: MENTAL ACCOUNTING

Imagine the following situation. You have decided to see a band who happen to be playing close to where you live. The admission charge is £10 per ticket. As you enter the venue, you discover that you have lost a £10 note (you have other money with you). The question is, would you still pay £10 for a ticket to see the concert? Something like 88% of people who are asked this question say they would – 12% would not (Tversky & Kahneman, 1981).

Now consider this situation. You have decided to go to see the same band and have already paid the admission price of £10. As you enter the concert hall, you discover that you have lost the ticket – without the ticket you will not be allowed into the venue. The question now is, would you pay £10 for another ticket? Somewhat surprisingly, only 46% of people say they would, and most are willing to go away disappointed.

But as you can see, from a money point of view, both situations are identical – either way, you need to ‘spend’ (or forego) £20 to see the band. As this example shows, even when making decisions about money, it is not always about the money! (Other examples of mental accounting can be found in Thaler, 2008.)

Of course, mental accounting helps us to budget and regulate our consumption to maximize overall well-being (utility). It certainly makes the cognitive task of managing money much easier. For example, knowing how much is ‘put aside’ for household expenditure and how much is available to be spent on non-essential items surely makes life more convenient and, thus, contributes in its own way to our overall utility. But none of this sits well with neoclassical economics: if I want to save money in the supermarket (i.e., I have a preference for this) then why would I then want to splash out on an expensive meal? But, we do *misbehave* in these ways.

HEURISTICS AND BIASES

The mental accounting example above shows that some economic exercises require substantial cognitive effort and the human mind has, therefore, developed strategies to make them more manageable – among these strategies are heuristics and biases. They describe our tendency to think in certain ways (biases) and our use of rules or mental shortcuts (heuristics) to make decisions quickly, without the expenditure of too much cognitive effort. In many people’s minds, behavioral economics is all about heuristics and biases. They are important, but they are not the whole story. However, they are central to it and they have provided some of the best evidence that we do not always – indeed, not very often – conform to the depiction of rational *homo economicus* (ECON). It is now clear that processing heuristics play a very large role in economics and any viable economic theory needs to consider them.

Recognition of the importance of heuristic processing has shifted attention away from formal and mathematical rules for judgement and decision making (e.g., expected utility theory; see Chapter 3) to rules-of-thumb: simple and (reasonably) efficient procedures for forming judgements and making decisions. Heuristics can be thought of as mental shortcuts that are automatic, intuitive and do not require conscious thought – they just ‘feel right’ and, often in terms of outcomes, they are right. Building on the work of Herbert Simon (see Chapter 3), who first talked about heuristics, the early 1970s

saw the start of a highly productive collaboration between Daniel Kahneman and Amos Tversky who went on to list and define a large number of heuristics and associated biases that affect everyday life (Lewis, 2016). Tversky and Kahneman's 1974 paper attracted world-wide attention and set the behavioral economics research agenda to this very day. Later, in 2002, Kahneman won the Nobel Memorial Prize in Economic Sciences – this is notable because Kahneman is a research psychologist (by this date Tversky had died and Nobel prizes are not awarded posthumously – he most certainly would have been honored alongside Kahneman).

Although not consistent with the expected utility theory of rationality (see Chapter 3), heuristics – even despite the biases and errors that result – can be seen as rational in a world full of complex problems, incomplete information, and limited psychological resources (e.g., cognitive processing and self-control). Given these limitations, heuristics are good enough in most circumstances and enable judgements and decisions to be made in a timely and usually fairly accurate manner. However, heuristics are far from being infallible. The major limitation is their focus on only some aspects of the problem – those that seem salient and relevant – to the neglect of other (sometimes more relevant) aspects.

Heuristics and biases research is important because mainstream, neoclassical economists reasonably argue that if people are sufficiently incentivized and motivated, and have full (or good enough) information – *especially when it is about important life decisions* – they should show rational and consistent decision making: why would they not? These economists say also that, although some people behave in a dumb way, 'the market' is efficient and so at the *aggregate* level choice behavior conforms reasonably well to the principle of optimization. But as we have already seen in previous chapters, this is far from being the whole story – the financial crash of 2007–2008 is grand testimony to this fact (see Chapter 1).

Tversky and Kahneman (1974) initially outlined three heuristics: *availability*, *representativeness* and *anchoring and adjustment*. Others have been subsequently added, for example those involving making judgements (*judgment heuristics*) and choices (*evaluation heuristics*) easier.

AVAILABILITY HEURISTIC

The *availability* heuristic relates to the ease with which an idea comes to mind (see text box). It is used to estimate the likelihood or frequency of an event. The basic idea is that when an unlikely or infrequent event comes to mind, we tend to overestimate its occurrence. For example, the likelihood of being caught up in a terrorist incident is tiny, but we do not judge it this way. On the other hand, common and mundane events are not perceived to be as dangerous as, in fact, they are (e.g., a child's death in a home swimming pool is judged less likely than abduction – the first is much more frequent than the second – and the same is true for suicide and gun deaths in the USA, where gun deaths by suicide are more frequent than ones by murder).

The availability heuristic is used to explain why we are more influenced by a single story that leaves a greater impression than a wealth of statistical data – it is no wonder the National Lottery likes to publicize winners with a big public relations splash: “It could be you!” Alas, you have more chance of being struck down by a bolt of lightning! In the world of macabre politics, we see something similar: Joseph Stalin is reputed to have said, “The death of one man is a tragedy, the death of millions is a statistic”.

The availability heuristic has also been used to account for *illusory correlation*, which comes from recalling two events to mind. We have a tendency to perceive a relationship between two variables when, in fact, none exists. Illusory correlations are produced when two separate variables are paired together in such a way that

LETTER K IN WORDS

Are there more English words with *K* in the first position or with *K* in the third position? It is easy to think of *kangaroo*, *kitchen*, *kept*, etc. but more difficult to think of words with *K* as the third letter (e.g., *lake*, or *acknowledge*), but the third-letter position *K* words are more common. This is an example of the faulty reasoning of the availability heuristic (Tversky & Kahneman, 1973).

overestimates their frequency (e.g., Chapman, 1967). For example, we may visit a country for the first time, and the first couple of people we meet are very friendly and, then, we infer that all people in this country are friendly, whether they are or not. If we think they are especially friendly and we act in an especially friendly way towards them, then they may well reciprocate in kind, reinforcing our illusory correlation. Also, we may engage in *confirmation bias*: accepting all friendly behavior as typical of the people, and less friendly encounters as less typical. We thus unconsciously interpret their behavior in a way that confirms our beliefs.

STEREOTYPES AND THE DILUTION EFFECT

The representativeness heuristic may explain stereotypes and how they can be reduced: the *dilution effect*. Imagine you are asked whether Paul or Susan are more likely to be assertive – all you know is their name. What's *your* answer? Typically, Paul (as a man) is rated as more assertive. But now, if you are told that Paul's and Susan's mothers each commute to work in a bank, you are less likely to show this stereotype effect – Paul and Susan are typically rated as equally assertive. This effect is explained in terms of the extra information about Paul and Susan which makes them *less* representative of men or women in general (described in Kunda, 1999).

REPRESENTATIVENESS HEURISTIC

The *representativeness* heuristic has an influence when people think in terms of categories (e.g., what seems to characterize nurses and police officers?). The idea is that a stimulus (e.g., description of a specific person) with high *representativeness* comes about because it is close to the prototype of that category (i.e., this particular person seems to embody what characterizes the typical nurse or police officer). The problem comes when we confuse the stimulus (e.g., a specific person) with the category prototype – although this may seem a little abstract, the example below (see text box) helps illustrate it.

The *representativeness* heuristic can be very effective, but it can lead to errors and even prejudice. People can err in one of two ways. They can overestimate the probability that something has a very rare property or underestimate the probability of a very common property. This is known as the *base rate fallacy*. These mistakes violate the rational use of probability information (see text box).

BASE RATE FALLACY

Consider this problem (it is an example of Bayesian reasoning; see Chapter 3) which was published by Tversky and Kahneman in 1982. It involves an eye witness account of a hit-and-run incident by a taxi. Participants in this study were asked to estimate the probability of a witness identifying the correct color of the taxi *given certain information*. Two taxi companies operate in the city, one with green cabs and the other with blue cabs. The prevalence (base rate) is known to be: Green = 85%, blue = 15%. The witness to the crime reports that they saw a blue taxi. When in court, the eye witness is tested for accuracy of identification under the same lighting conditions as at the time of the commission of the crime. They correctly identified the color presented 80% of the time, and failed 20% of the time. The study participants were then asked: What is the probability that the cab involved in the accident was, in fact, blue, as claimed by the eye witness? Well, what would be your answer? The results revealed that most of the participants gave a probability that was greater than 50%; and many estimated that it would be 80% or higher. Now, if we did not know the actual color of the taxi then a reasonable guess would be that there is an 85% chance it was a green; but we have additional information on the accuracy of the eye witness identification to take into account. Given all of this information, the true probability that the taxi involved in the hit-and-run was, in fact, blue is only 41%. These results, which have been replicated in many different contexts, show that participants placed more evidential weight on the testimony of the witness than on the base rate information.

THE CONJUNCTION FALLACY

The representativeness heuristic (and, to some extent, the persistent power of stereotypes) is also reflected in the *conjunction fallacy*, which is a formal fallacy that once again demonstrates that most of us are far from being star statisticians. Consider the following situation which is very well known in behavioral economics. Tversky and Kahneman (1983) presented subjects with a brief description of a woman named Linda. She is described as, “31 years old, single, outspoken, and very bright. She majored in philosophy. As a student, she was deeply concerned with issues of discrimination and social justice, and also participated in anti-nuclear demonstrations”. Subjects in this study then ranked the likelihood of different statements about Linda. These included “Linda is a bank teller”, and, “Linda is a bank teller and is active in the feminist movement”. The results showed that subjects displayed a strong tendency to rate the second more specific statement as more likely. However, a conjunction of the form “Linda is both a bank teller and in the feminist movement” can never be more likely than the more general statement “Linda is a bank teller”.

Put more formally, the probability of a conjunction can never be greater than the probability of its conjuncts. That is, the probability that two things are true at the same time can never be greater than the probability that only one of them is true. But, in some cases people judge that a conjunction is more likely than one of its conjuncts on its own. What is happening? It may be that the conjunction suggests a scenario that people can picture more easily than just one of its components: Linda being a bank teller and in the feminist movement. The capacity to imagine seems the vital ingredient to this fallacy. In this example, Linda seems to fit the stereotype of a feminist and not one of a bank teller, so we find it easier to think of Linda as a bank teller who is also a feminist. Lots of other examples show much the same thing. Tversky and Kahneman reported that they found that subjects were very unwilling to give up these judgements, even when they were shown to be illogical.

Another consequence of the representativeness heuristic relates to biased judgments concerning randomness – the *misperception of randomness*. Do you think the sequence 1, 2 3, 4, 5, 6 (in that order)

is more or less likely than any other sequence (e.g., 5, 3, 2, 6, 4, 1)? What about the sequence of heads (H) and tails (T) in coin flips, which one is more likely TTTTTHHHHH or HHTHTTTHTH? Of course, all of these sequences are equally probable, but we often believe that the pattern that appears to be more random is more likely. Casinos exploit this misperception. For example, on the roulette table they show the sequence of the last black/red numbers that came up. Some players will see a *run* of red and assume that ‘it is now time’ for black and bet accordingly (it makes no difference, because the ball does not have any memory of where it last landed, even if it cared!). Much has been talked about the *gambler’s fallacy*: the tendency to expect outcomes to even out over the short run (e.g., Tversky & Kahneman, 1971). We tend to believe that, for example, a long series of tails in a coin flip game must surely be followed by heads because we intuitively know that with a fair coin we would roughly see the same number of heads and tails after many coin flips. However, assuming that the coin is indeed fair, each individual coin flip is equally likely to result in either heads or tails, regardless of what came before. Gamblers sometimes go bust before the run has the common decency to correct itself.

Still another consequence of the representativeness heuristic relates to the effects of people’s *insensitivity to sample size* (see text box).

ANCHORING AND ADJUSTMENT HEURISTIC

The third major heuristic is *anchoring and adjustment*. It is used when people have to estimate a number. The idea is that we start from a readily available number – this is the ‘anchor’ – and, then, we shift up or down *from that point*. This can be in the form of a minimum monthly payment on a credit card, or something irrelevant, such as reading your national insurance number before making an estimate. In one such experiment, subjects watched a number being selected from a ‘Wheel of Fortune’, which they knew was random and, therefore, had nothing to do with the task they were then asked to do (Tversky & Kahneman, 1974). After seeing this number, they were asked: “Is the percentage of African countries which are members of the United Nations larger or smaller than x%?”

INSENSITIVITY TO SAMPLE SIZE

Tversky and Kahneman (1974) presented subjects with the following problem designed to measure their understanding of random variation and its relation to sample size. Start by imagining that over a long period of time, the ratio of male and female babies born in a hospital is 50/50. You are also told, if you need to be, that this will not be true for all periods of time as we should expect some variation. Tversky and Kahneman asked the question: does the likelihood of deviating from exactly half depend on the number of births for a particular day? What do you think?

Sampling theory tells us that, on average, there will be more variation (i.e., deviation from a 50/50 split) the smaller the sample size. But people's answer to the question does not reflect this fact. Typically, they say that the *number* of births will not affect the sex ratio on any one day – in this specific study, the range was set at a 40–60% sex ratio and people thought that the actual ratio would not fall outside this range. (Of course, on some days all births would be males or females.) Again, most of us do not possess perfect statistics skills, unlike neoclassical economics would make us believe.

(The percentage number was taken from the Wheel of Fortune.) They were then asked to guess the actual percentage. Despite the fact that they must have known that the wheel of fortune number was pure chance, their estimates were closely tied (i.e., anchored) to this randomly selected number.

The upshot of numerous experiments is that people get tied to the anchor and this contaminates their estimate. Whatever the process that leads to this effect, it would seem to have a wide range of implications for how we estimate numbers. People find it hard to avoid doing this, even when incentivized, and when challenged to explain their decision they deny that their estimates were anchored. Perhaps unsurprisingly, the effect is stronger when the decision needs to be made fast. Moreover, the anchors do not even have to appear sensible. For example, when people were asked to estimate the year of Albert Einstein's first visit to the United States, the absurd anchors of 1215 and 1992 were included among more sensible years and

ANCHORING EFFECT – SEQUENCE OF NUMBERS

The anchoring effect is found also when numbers are combined to form a composite judgment. Estimate in your mind the sum of the following numbers: $8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1$. What is your answer? It is highly likely that whatever it is, it would be higher than if you had estimated the sequence: $1 \times 2 \times 3 \times 4 \times 5 \times 6 \times 7 \times 8$ (Tversky & Kahneman, 1973). As you no doubt calculated in your head(!), the right answer is 40,320.

influenced the answers just as much (Strack & Mussweiler, 1997). There are many examples of anchoring (see text box).

COHERENT ARBITRARINESS

Examples of the heuristic of anchoring and adjustment were given by Ariely, Loewenstein and Prelec across six different experiments in 2003 in which they showed that apparently irrelevant features have influential consequences. Their results demonstrate that arbitrary anchors can affect the initial valuations of products and hedonic experiences. However, the valuations in these experiments appeared to be coherent and could thus give the ‘illusion’ of order – that is, generated by stable underlying preferences. This conclusion is reflected in the sub-title of their paper, ‘stable demand curves without stable preference’. Most worrying for neoclassical economics, they conclude that their results show that behavior:

- (1) cannot be interpreted as a rational response to information;
- (2) does not decrease as a result of experience with a good; (3) is not necessarily reduced by market forces; and (4) is not unique to cash prices.

Another nice example of this process was given by the same authors. They showed a new class of MBA students a range of consumer products (e.g., computer accessories, wine bottles and luxury

chocolates). Then, after describing these products, the students were asked whether they would buy each good for a certain amount in dollars, which was equivalent to the last two digits of their social security number (which, of course, is an arbitrary number). Then, after their accept/reject response, the students were asked their dollar maximum *willingness-to-pay* (WTP) for the product. Students were incentivized appropriately and, therefore, properly motivated to play the game seriously: both their accept/reject response and their WTP response could influence the purchase. The results were both surprising and remarkable. Students with above-median social security numbers stated values that were considerably higher than those reported by students with below-median numbers – about 57 percent to 107 percent. This is despite the fact that the students were not misled about the products and they must have had a good idea about their likely value. Remember that these MBA students were ‘smart cookies’ and not easy-to-mislead people – even they seem not to have the capacity to think straight when anchored to an arbitrary number.

As the authors of this important study concluded, the sensitivity of WTP to anchors indicates that we do not make a choice or price a task in the context of an inventory of pre-existing preferences. Instead, people probably have a range of what they consider to be acceptable values, and we base our ‘buy’ or ‘don’t buy’ on this range. Within the range, anchors exert their toll.

These authors show in five other examples the robustness of anchoring, even when market forces are at play. Such results raise a number of fundamental concerns for neoclassical economic assumptions and principles. Perhaps of most significance – remember the sole assumption underlying utility theory is that people will behave consistently (see Chapter 3) – is the finding that what can appear to reflect preference consistency may not, in reality, be anything of the kind.

AFFECT HEURISTIC

We have now reviewed a number of heuristics that facilitate everyday decision-making, but there are still more. For example, the way we

feel about something influences our judgement and decision making. This is the *affect* heuristic (see text box). We might be excited or fearful about buying shares in a particular company. But, we can also be influenced by ambient stimuli (e.g., uplifting music in the background) which have nothing to do with our decisions but can still affect them. (Usually, we use the term ‘affect’ to refer to a short-term reaction to a specific stimulus, but longer-term mood is important too; see Chapter 5.) Somehow, we confuse how we are feeling with the hedonic quality of the decision itself, even though there may be no relationship at all – and we are fully aware of this fact.

AFFECT HEURISTIC – DISEASE AND DEATH

Think about this problem. There are two diseases. One kills 1,286 people out of every 10,000 infected. The other disease has a fatality rate of 24.14% (let us assume that 10,000 have also been infected). Which of the two diseases seems most dangerous? Although clearly the second disease is twice as dangerous, when Yamagishi (1997) asked this question, most people said that it was the first disease presumably because they can imagine 1,286 dead people and this affects them more than a percentage figure showing the chances of a single person who is *not* likely to die from the disease (although there will be many more fatalities in total).

SYSTEMATIC DEVIATIONS FROM RATIONALITY

As we have just seen, our everyday behavior is governed by heuristics and biases, which lower the cognitive effort of decision making. As a consequence, humans systematically deviate from rational behavior – we usually behave like *homo psychologicus*, rather than our abstract neoclassical friend *homo economicus*. Research has further shown a number of systematic deviations from the expected utility theory we discussed in Chapter 3. Some of these deviations are related to systematic, significant and meaningful differences between people in their aversion or tolerance of risk.

RISK AVERSION

We have seen in Chapter 3 that the diligent rational person (i.e., economic ‘agent’ in the lingo of economics) who bases their decision on expected utility theory, in reality, could lose all their money very quickly – especially if the choice with the higher expected utility involves a low probability of winning a large amount of money. It is often far more sensible (rational?) to accept a lower expected utility value with a higher probability of success – thus avoiding the risk of leaving the economic game (whatever it might be) empty-handed, unless one is playing many iterations of it and the financial (or other) resources are available to bear the short-term pain. Long-term well-being may well be higher if we take the risky gamble many times because the expected value represents the long-run average outcome of repeated gambles; but one-time choices it might be wiser to follow the advice of the proverb that observes that a bird in the hand is worth two in the bush. But, when we are willing to accept a ‘sure-thing’ sum that is less than the expected utility theory value, this is interpreted as implying an aversion to risk – that it may well be, but it might also be the sensible choice.

Risk aversion is especially important in behavioral finance. It is reflected in the fact that when we are presented with uncertainty, we attempt to reduce this negative state, and this makes us ‘risk averse’. Consider this choice. Would you prefer option 1 or 2? Option 1 is a ‘sure thing’ guaranteed scenario: you get £50. Option 2 involves flipping a (fair) coin to get £100 or nothing. Which option would you go for? Keep in mind that a fair coin is equally likely to land on either heads or tails. The expected value of the coin toss can thus be calculated as $(0.5 \times £100) + (0.5 \times £0) = £50$, which is exactly the same as in the first scenario. If you go for Option 1, then you are said to be risk averse because you rejected a gamble of equal expected value. But, your decision is surely dependent on your current wealth, or perhaps what you consider is your long-term *permanent* wealth. Image the sum of money involved is 5 pence, £5, £50, £500, £5,000, £50,000. Are your decisions over these options equally dependent on expected utility theory?

It may well be for Bill Gates, but how about you? You probably could not care less about the 5 pence gamble, and you probably could not care more about the £50,000 one. Wealth is important, whether it is actual or perceived.

Risk aversion can lead to a willingness to accept a sure payoff which is lower than the expected value of an alternative, but risky choice. For example, we may be willing to put our money in a bank that is paying negative interest, that is, in fact, charging us to store our money – indeed, after the 2007–2008 financial crisis, companies even bought government bonds with negative yields (i.e., they were willing to pay, quite literally, for the reduction in an uncertain future). Buying government bonds or stashing away money in the bank ensures that it is safe as opposed to investing in an uncertain stock market. All very risk averse but, at the same time, all very sensible perhaps? (Certainly, at the time, the large financial institutions thought so.)

THE EQUITY PREMIUM PUZZLE

Our aversion to risk, and even more so to uncertainty – especially, as Mervyn King (2016) calls it, ‘radical uncertainty’ (we cannot even imagine all possible future states of the world) – manifests itself in what is called the ‘equity premium puzzle’ (Mehra & Prescott, 1985). This puzzle describes the phenomenon that the observed returns on stocks over the past century have been much higher than returns on government bonds (some 3–7% in the long run), implying that this is because the stock market is required to pay over-the-odds to attract investors. The explanation that stocks are much riskier than bonds does not seem a wholly adequate explanation because of the magnitude of the disparity between the two asset classes and the historical record (i.e., information) which show that buying stocks is a sensible form of investment. One explanation of this puzzle is that it is assumed that this disparity reflects investor risk aversion for which they must be paid compensation in the form of higher percentage returns – this is another good example of how ‘information’ is not processed in an unbiased fashion.

AMBIGUITY AVERSION

Not only are we risk averse, but as alluded to above, we tend to be averse to ambiguity, or as it is sometimes called, we display ‘uncertainty aversion’. Ambiguity aversion is a preference for risks that are known over ones that are not known – in common parlance, “better the devil you know”. This form of aversion is illustrated by the Ellsberg paradox (see text box). Despite their apparent similarity, ambiguity aversion is somewhat different from risk aversion. As we saw above, in the case of risk aversion the probability for each outcome is known; in contrast, ambiguity aversion entails a situation where the probabilities of outcomes are unknown.

THE ELLSBERG PARADOX

People have a tendency to prefer to bet on a known probability. For example, would you prefer to bet that a ball drawn from an urn is red if: (1) there are 50 red and 50 black balls, or (2) you do not know the number of red/black balls in an urn of 100 balls? People tend to much prefer the known 50/50 split (Ellsberg, 1961).

All of the above is very much out of step with the assumptions and principles of neoclassical economics, as discussed in Chapter 3.

FRAMING EFFECTS

It is important to note that the above ‘effects’ do not exist outside a specific context. In this regard, how the problem is ‘framed’ – that is, the form in which the content and information are presented – is highly relevant. Kahneman and Tversky are rightly famous for highlighting the importance of ‘framing’ on judgement and decision making. To give a concrete example, consider Tversky and Kahneman’s classic ‘Asian disease problem’ (Tversky and Kahneman, 1981; see text box). The first question is asked in such a way as to establish the reference point that everyone will die; in contrast, the reference point for the second question suggests that no one

will die. It may also be the case that the ways these questions are posed primes people to think about them in different ways. For example, maybe the second question makes one focus on trying to save everyone. We will see the practical applications of framing in Chapters 6 and 7.

ASIAN DISEASE PROBLEM

Imagine the following scenario described in a seminal paper by Tversky and Kahneman in 1981. The U.S. is preparing for an outbreak of an unusual Asian disease, which is expected to kill 600 people. Two alternative programs to combat the disease have been proposed. The exact scientific estimates of the consequences of these programs are as follows: Decision 1: If program A is adopted, 200 people will be saved. If program B is adopted, there is a $2/3$ probability that no one will be saved, and a $1/3$ probability that 600 people will be saved. Decision 2: If program C is adopted, 400 people will die with certainty. If program D is adopted, there is a $2/3$ probability that 600 people will die, and a $1/3$ probability that no one will die. Tversky and Kahneman found that 72% of subjects chose A over B, while 78% chose D over C. Therefore, when given these choices with these different frames, people tend to prefer A to B but with a different frame D to C. But note that the only difference between A and C (and B and D) is that the same choice problem is framed in different ways!

PROMINENCE EFFECT

Related to framing is the *prominence effect* (e.g., Tversky, Sattath & Slovic, 1988). Let us look at this more closely. Do you agree with the statement that we should not quibble over the cost of road safety if it saves one child's life? You may well be tempted to agree, but would you still agree if you are then told that the same amount of money could save the lives of many more children suffering from cancer? (This is an example of 'opportunity cost'; see Chapter 2.) In other words, would you prefer to save (for sure!) the life of one child with cancer, or would you prefer to improve the chances of all

children suffering from cancer by a tiny fraction (e.g., .01%)? The latter option may actually save the lives of more children. These choices illustrate the importance of prominence, and it is the reason why adverts for charities never talk about the larger population but, instead, show one child, usually giving him/her a name: this makes it *personal* to us and it influences the way we think, feel and act.

PROSPECT THEORY

We have now learned about the many ways our choices are influenced by how options are presented and how our mind processes them. Among other things, we have seen that people are averse to risk, are easily influenced by framing and by random numbers that work as anchors or new, arbitrary reference points when they have to make a choice. By now you might be wondering whether all these effects, fallacies, heuristics and biases could be neatly summarized in one comprehensive model that demonstrates real human behavior – if so, then this would be a great achievement. Such a model would counter one potential criticism of behavioral economics: it proliferates a list of behavioral anomalies relating to deviations from rational judgement and decision making. This descriptive approach stands in stark contrast to that of neoclassical economics, which aims at parsimony and elegance – although the price to be paid for these is the lack of psychological realism.

The formulation of Prospect Theory by Kahneman and Tversky in 1979 represented a turning point in behavioral economics because it offered a simple model that accommodates many seemingly separate effects – like all good economic models it assumes little and explains much. (Apparently, it was called ‘prospect’ for no better reason than to make it sound distinctive and to differentiate it from other ‘value’ theories – it worked!) According to the Royal Swedish Academy of Sciences which awards the Nobel Memorial Prize in Economic Sciences, in 2002 they stated that Kahneman’s work is important “for having integrated insights from psychological research into economic science, especially concerning human judgment and decision-making under uncertainty” – later in 2017, Richard Thaler was awarded the same Prize for something similar.

Prospect Theory is about how people *actually* behave, not how they *should* behave according to the normative perspective of neoclassical economics. It is a powerful theory because it is rather simple, very elegant and can account for many of the phenomena discussed above. It has been influential especially in providing a theoretical model of the effect of loss aversion, which then can be used to explain related empirical findings (e.g., the *endowment effect*; see above). In particular, Prospect Theory calls attention to the importance of *reference points*: we do not look at things in *absolute* terms but we focus on *relative* changes around a reference point, and these can be influenced in various ways (e.g., framing) – the extent to which things change is important to us (as Thaler, 2015, reminds us, contrary to neoclassical economic thinking, the difference between losing £10 and £20 *feels* bigger than the difference between losing £1,300 and £1,310).

Prospect theory is described with a deceptively simple looking figure (see below). This figure shows the shape of the utility curve under gain and loss, relative to a reference point (shown as A). The notion of a reference point helps us to understand how framing works: by establishing a point around which gains and losses are evaluated. The important thing to notice is that the gain curve is concave while the loss curve is convex. What does this tell us? It means that a one unit gain (e.g., moving from A to B in Figure 4.1) leads to a smaller change in value (utility) than a one unit loss (e.g., moving from A to C in Figure 4.1). This gives rise to the somewhat poetic expression, “losses loom larger than gains” (as can be seen in Figure 4.1, there is a kink at the reference point where the loss is strongly felt).

The influence of the reference point has been used to account for real-life behaviors. For example, people are more willing to back long-shot (e.g., 15 to 1) horses after they have lost money – an example of the ‘reflection effect’, in this example, risk-taking in the domain of loss. The argument runs that the potential gain is greater when seen with reference to the loss. McGlothlin empirically confirmed in 1956 that people tend to bet more on long-odds horses in the last race, presumably after they have accumulated a loss.

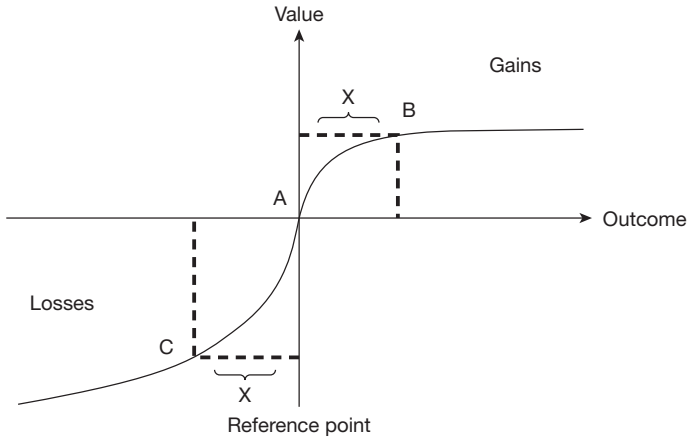


Figure 4.1: Prospect theory – the value function

Source: adapted from Kahneman & Tversky, 1979, Figure 3

REFERENCE DEPENDENCE

Well, in real life, most judgement and decision making takes place in a definite context and situation. We have seen that this is an important feature in Prospect Theory. A simple example of context can be shown by putting two hands in separate bowls filled with hot and cold water, then in one large warm bath. In the large warm bowl, the hot hand feels colder and the cold hand feels hotter. This and other easy-to-demonstrate effects show that experience and judgement are not absolute.

STATUS QUO BIAS

Another important finding is that we have a definite preference for the familiar. Prospect theory helps us understand this *status quo bias*: a preference for the current state of affairs (e.g., Samuelson & Zeckhauser, 1988). It is thought to be the result of the combination of loss aversion and the endowment effect (see above). The current baseline (or status quo) is taken as the reference point, and any

deviations from that initial point are perceived as a loss. The idea is that we weigh the potential losses of switching from the status quo more heavily than the potential gains from the switch. As a consequence, we have a tendency not to switch at all – we wait until the benefits clearly outweigh the costs. It is probably for this reason that we do not readily switch banks and utility companies, or jobs or romantic partners – added to this is the perceived hassle which is a *transaction cost* (see text box).

TRANSACTION COSTS

Transaction costs refer to the costs entailed when making an economic exchange. Another way of seeing it is the cost of participating in the market. Transaction costs can be of various kinds: (a) search and information costs (finding the good/service and determining its price); (b) bargaining costs (reaching an acceptable agreement with the counterparty to the transaction); and (c) policing and enforcement costs (ensuring that the counterparty adheres to the terms and conditions of the contract). All of this is psychological hassle and entails some degree of risk and uncertainty which people prefer to avoid.

But things might go deeper. Even if there is no cost/benefit framing, we still tend to go with the status quo (e.g., when choosing the color of a new car). There seem to be other things going on, including the motivation to avoid the possible *regret* resulting from making the wrong decision (see Chapter 7) – especially when opportunity costs are involved. One way to escape from this regret is to not make a decision at all! But, according to neoclassical economics, this is not rational because we are not seeing the opportunity costs associated with doing nothing – which is understandable because these are much less obvious until they are pointed out: that job might have been much more rewarding, and a new romantic partner far more fulfilling.

We have seen above the range of heuristics we use and various forms of aversions and biases that contaminate our otherwise

neoclassically-constrained rational mind. These seem to show that, indeed, we do not behave in accordance with the strict (or even relaxed) precepts of *homo economicus* – while we may not be entirely *Homer* (Simpson) *economicus*, we certainly often give the impression that we are not averse to his style of thinking and behaving.

The next section examines the cognitive systems underlying the behavioral economic phenomena presented above. They help to explain why we behave the way we do, and specifically why our judgement and decision making fall far short of the standards demanded by neoclassical economics.

MIND: SYSTEM 1 AND SYSTEM 2

There are some truly fascinating aspects of the brain-mind processes that lead to economic judgement and decision making. To start with, we need to know that the thing we call the ‘mind’ is made up of separate systems, each dedicated to specific psychological functions. There are ‘knowledge’ structures, called ‘cognitive’ – specialized for language, memory, learning, reasoning, decision making, and so on. Also, there are ‘affective’ systems devoted to emotion, moods, desire, motivation, and so on. All of these ‘software’ structures and systems are instantiated in the ‘hardware’ of the brain.

Given the importance of cognitive and affective systems in our understanding of the mind, it is not surprising that they have turned out to be central to our understanding of behavioral economic phenomena. This has largely been the result of the shift in attention away from the view that the mind is a cold, calculating rational machine to one based on the idea that it is often ‘hot’, heuristics-based and biased.

TWO SYSTEMS OF PROCESSING

Although something of a simplification – but, nonetheless a useful one – two major systems of cognitive and affective processing are thought to exist. In behavioral economics, these are referred to as ‘System 1’ and ‘System 2’ (e.g., Kahneman, 2003, 2011). System 1 is reflexive, fast, automatic, biased, intuitive, emotional, habitual,

nonconscious, and prepotent – also called implicit/procedural. System 2 is reflective, slow, controlled, effortful and can be conscious – also called explicit/declarative. System 2 is said to be ‘clean’, whereas System 1 is said to be ‘dirty’ (but in a different sense to the Freudian notion of the unconscious!). There is a vast psychological literature on this dual-processing theory (e.g., see Stanovich & West, 2000, Table 3). It is thought that System 2 operates only when there is a definite choice to be made and System 1 cannot arrive at a solution. Behavioral economics lays emphasis upon the role played by System 1, especially in terms of the heuristics and biases discussed above.

These two systems need to be put into proper scientific perspective. In psychology, it is generally accepted that, at the moment of execution, *all* cognition and behavior is controlled by System 1. This *all* caveat is demanded by the fact that brain processing must come before cognition, feelings, behavior, and so on, and certainly well before complex cognitive processing, and especially anything involving conscious awareness: this takes a considerable amount of time, in the region of 100s of milliseconds, which in brain terms is a very long time (e.g., we recognize faces in as fast as 10–30 milliseconds).

Given what we now know about how the brain works, it would, indeed, be truly astonishing if brain processing did not come before cognition, feelings and behavior that characterize the mind. Yet, we rarely follow through the implications of this fact – and, as discussed below, they are significant for all forms of judgement, decision making and behavior, and for economics in general.

System 2 engages when we have a deliberate choice to make and the automatic reactions of System 1 are neither appropriate nor adequate (e.g., when novel stimuli are encountered but are mistaken for something familiar). But system 2 is limited in capacity, requires attention and deliberative processing – it is also prone to fatigue. The point to emphasize is that it is slow, effortful and a limited resource. As such, it cannot be relied upon to deal with the everyday (indeed, every millisecond) business of the mind. For example, we do not need to deliberate about our burning hand if inadvertently placed on a hot stove: System 1 reacts in a fast, automatic manner and *only then* is System 2 engaged and we think about it. To take

another example: we may process the words on this page automatically, but, because this material may be new, it may capture System 2's deliberative processing to grasp the intended meaning. But once we are familiar with things, we quite literally have no 'need to give it a second thought' and System 1 works its magic without bothering System 2.

To the extent that System 1 is in charge of all immediate psychological processing, System 2 has been likened to the public relations department of the mind, seemingly in control but, in reality, only the recipient, broadcaster, and 'spin doctor', of decisions and actions already taken by System 1.

THE PROBLEM FOR NEOCLASSICAL JUDGEMENT AND DECISION MAKING

Now, in terms of neoclassically defined rational decision making, there is a need for considerable computational power and ability, as well as a lot of self-control – just think of what is required when calculating the expected utility of different outcomes (see Chapter 3). It is something of an embarrassment that we seem cognitively ill-equipped to process information in this deliberative and unbiased manner. We may want to 'wish away' this problem by invoking Milton Friedman's 'as if' argument (i.e., we behave as if we were doing these complex calculations; see Chapter 3), but the problem remains that some brain/mind mechanism must be doing the computational heavy lifting: most of the time, this must rely upon the fast-and-dirty System 1 which seems unequal to the neoclassically-defined computationally demanding task at hand.

But there is something worse to come – something rarely discussed in relation to behavioral economics. This matter, which has been extensively discussed before (e.g., Gray, 2004), is something of a scandal in the behavioral sciences. This is the problem: if all forms of cognition, feelings and behavior are (System 1) automatic at the *very* moment they occur then how can System 2 ever gain control over these processes? This is related to another problem, that of free will.

FREE WILL

Given what we now know about System 1 processing, in what sense can we defend the common notion of ‘free will’? But this seems to be demanded of *homo economicus* (ECON), who is said to process information in a cognitively complex, deliberative and unbiased fashion where a choice must be made between alternative courses of action with different expected utility values. System 1 seems ill-equipped for this task (can it exert free will in any meaningful sense?) and System 2 inadequate in terms of speed of processing and limited capacity.

Perhaps not all is lost. There is more support for the power of System 2 to exert ‘free won’t’; that is, the interruption of System 1 processing. [Our actions are initiated (in brain terms) long before we are aware of them. This fact challenges the usual notion of free will (“I think and *then* I act”).] This means that, in terms of behavioral economics, System 2 cognitive processes may be able to inhibit System 1 automatic behavior in situations where heuristics lead only to very sub-optimal judgements and decisions – the evocation of System 2 is also likely to happen in complex and ambiguous situations where we know that careful, deliberative processing is needed. This psychological literature serves further to undermine the neoclassical notion of the rational economic agent, *homo economicus* (ECON).

SYSTEM 1 SOPHISTICATION

This discussion highlights something else of relevance. System 2 is usually thought to be more rational than System 1, which is said to be responsible for the biases, errors, and so on that define behavioral economics. However, the broader perspective on this matter is that System 1 can be sophisticated too; indeed, *it must be* if it is in charge of *moment-by-moment* cognition, feelings and behavior which is often good enough to solve even complex problems. As elaborated by Corr (2010), it seems that once we have learned appropriate cognitive and behavioral routines – and we do this by System 2 processing – System 1 cognitive and behavioral routines

can be primed and triggered by the situation and context. It is when System 1 processes are *inappropriate* to the situation or context, or when they have not been developed properly in the first place, that problems occur.

The implications of this dual-process cognitive psychology literature for neoclassical economics is that without a *lot* of training and experience, and the exercise of System 2 processing at appropriate junctures, ‘rational’ processing just will not happen and we fall back on usually good enough cognitive short-cuts, that at times of stress, ambiguity, or uncertainty lead to erroneous judgement and decision making. However, even when things are truly working well, we now know enough from behavioral science to conclude that, typically speaking, we are vulnerable to a range of influences (e.g., salience), and that good judgement and decision-making processes are often hijacked by what Richard Thaler calls ‘supposedly irrelevant factors’ (SIFs; see Chapter 1).

CONCLUSIONS

We have seen that there are systematic deviations from the expectations of neoclassical economics: we *misbehave*. Behavioral economics research has provided elegant theoretical frameworks to account for the many forms of misbehavior routinely seen. Kahneman and Tversky’s prospect theory proved especially influential by combining psychological insights with economic phenomena. Various forms of heuristics explain judgement and decision making much better than standard neoclassical theories – or, at the very least, they explain a wider range of phenomena. We have also seen how behavioral economic phenomena are the result of specific brain-mind cognitive and affective systems that are specialized for different functions, and the implications of considering free will in relation to the self-controlled processing demanded by neoclassical economics.

The next chapter explores these issues further by considering the roles played: (a) by the social factors that influence our behavior; and (b) by individual differences between people in mood, emotion and personality. In addition, we survey some truly fascinating findings

from research on monkey behavior which show parallels with insights from human studies, pointing to a shared phylogenetic past and the deep evolutionary roots of economic judgment and decision making.

FURTHER READING

- Ariely, D. (2011). *The Upside of Irrationality: The Unexpected Benefits of Defying Logic*. London: HarperCollins.
- Kahneman, D. (2011). *Thinking, Fast and Slow*. London: Penguin.
- Lewis, M. (2016). *The Undoing Project: A Friendship That Changed Our Minds*. London: Allen Lane.

MANNERS, MONKEYS AND MOODS

We are now well aware that we do not always behave in accordance with neoclassical assumptions and principles; indeed, often, we do not seem even to approximate them – in too many ways for logical comfort, we are more Homer Simpson than *homo economicus* (ECON): we *misbehave*. In this chapter, we explore the bases of such misbehavior in terms of fundamental principles and findings from psychology. Three related areas are discussed – these are fascinating in their own right and, more importantly for us, necessary to gain a deeper understanding of the psychological foundations of behavioral economics.

First, social psychological findings reveal that we are influenced by other people and the social waters in which we swim (see text box). Especially, we have a strong tendency to conform to prevailing and fluctuating social norms and expectations. In this respect, social *manners* are important – yet, we are often simply not aware of their existence or influence. None of this is especially new. Over two hundred years ago, Adam Smith famously reminded us of our desire to establish harmonious social relationships and to fit into society, and to behave in order to please the ‘impartial spectator’ (see Chapter 2).

WHAT'S WATER?

Behavioral economists are fond of telling a joke to illustrate the point that we are influenced by environmental factors of which we are often unaware. Two little fishes are passing the time of day and a big fish swims past and says: "How's the water boys?" The two little fishes look at each other puzzled, and one asks what the other is thinking: "What's water?" The social psychological world is the human equivalent of water to fish.

In regard to the manner of social behavior, we do not always, or typically, behave to maximize our immediate financial self-interest. Our social behavior seems to be governed by considerations of fairness, cooperation and the 'warm glow' we feel when we help other people – although, getting along and cooperating with others may well be a selfish strategy in the longer-run when the economic games we are playing allow for punishment and reciprocity (see below). (We have seen in previous chapters that utility can come in various guises, so apparently relatively selfless behavior may be an 'impure' form of altruism.)

Second, we summarize some of the fascinating monkey literature which has attempted to root economic judgement and decision making in an evolutionary context. We learn that monkey economic behavior is remarkably similar to that of human's and so permits further insights into its deeper biological roots.

Finally, we examine transient psychological (and physiological) 'states' (e.g., hunger) that can be highly influential, which at any moment affects how we think, feel, judge, decide and behave. These momentarily fluctuating states can even be induced by irrelevant factors (e.g., background music) unrelated to the economic problem at hand – in everyday language usage, *moods* are relevant. Susceptibility to these transient *states* is related to longer-term stabilities in personality *traits*. There is now a growing interest in how the heterogeneity (i.e., diversity) seen in various forms of economic behavior is related to systematic and measurable individual differences

in personality (e.g., economically cooperative people tend to be those who score higher on the personality factor of agreeableness, which describes kind and considerate behavior; see below). As far as we can tell, these associations are not washed away by the tide of incentives and situational influences: we all differ from each other and these individual differences have important consequences for economic life.

MANNERS: THE SOCIAL WORLD OF ECONOMICS

Central to social psychology is the notion that, without knowing it, we are subject to influences in the environment and these influences shape our behavior at any given moment; and, in addition, they *condition* us to behave in certain ways in the future. Sometimes these are deliberate attempts to influence us: for example, subtle changes to the choice architecture (e.g., in the cafeteria environment, the placing of fruit at the entrance to encourage healthier eating; see Chapter 6) or blatant commercial campaigns (e.g., product advertising; see Chapter 7). Typically, social influences are often not obvious and, more often than not, we are unaware of their existence – we are oblivious to the social waters in which we swim. More generally, we are subject to tacit influence from other people who, without knowing it, transmit social effects. Such ‘social influence’ refers to changes in attitudes, beliefs, opinions, values and behavior *as a result of* exposure to other people’s attitudes, beliefs, opinions, values and behavior. Social influences are central to behavioral economics, but alien to the neoclassical economic mind which places greater focus on information content, not social context.

As we saw in Chapter 4, it cannot be assumed that our behavior is autonomous in the sense that we first think and *then* act. We often act for reasons that are not obvious to us. This phenomenon is shown by social priming.

PRIMING

Priming refers to the scientific finding that thoughts, emotions and acts make further thoughts, emotions and acts more readily accessible

No conscious or cognitively complex deliberation is required for this to happen. The basic idea is that brain networks are activated by an initial ‘prime’ (e.g., a word, ‘Bank’) which then sensitizes the semantic system (i.e., the cognitive system that is concerned with the meaning of words) and this induced state of readiness eases the processing of subsequent stimuli (e.g., speed of recognition of the word ‘Money’).

As an example of priming, experimental studies have shown that young people who have been exposed to words relating to elderly people start to behave in ways typical of older people. In one study of this research program, which is most associated with John Bargh, two groups of participants were exposed to different sets of words: (1) one group (i.e., those in the ‘experimental condition’) to elderly related words (‘Florida’, ‘Bingo’ and ‘grey’; the study was conducted in the USA); and (2) another group (i.e., those in the ‘control condition’) to neutral words that were unrelated to being elderly (Bargh, Chen & Burrows, 1996). Even though walking slowly was not included as one of these primed words, those in the experimental condition who had been exposed to the elderly-related words tended to walk in the same manner as elderly people when they left the test room. In other words, their behavior was primed (i.e., facilitated) by exposure to elderly-related words.

Although such studies can be difficult to replicate, and Daniel Kahneman has called for the replication of such classic priming studies, he is in no doubt that priming exists (for an incident from his private life, see text box).

PRUDENT SELF-INTEREST AND TRUST

In Chapter 2, we saw how the great classical economist, Adam Smith, conceived of the psychological nature of economic agents. In addition to the *prudence* required to look after our own self-interests, he argued that we are regulated by the desire to be acceptable social beings and to be seen by others in this favorable light. This social perspective makes a lot of sense because we can imagine a society in which there were only selfish people. It would

PRIMING: UNDRESSING THE MAID

Kahneman is fond of recalling in his public talks an example of priming from his private life. He recalls being with his wife – Anne Triesman, herself an accomplished psychologist – and the host of the occasion was a man that his wife thought was ‘sexy’. Kahneman then heard her say: “He undressed the maid himself”, which certainly seemed an odd thing to say. Upon asking her how she could possibly be in possession of this information, she told him she had, in fact, said: “He rarely underestimates himself”. The word ‘sexy’ had primed Kahneman’s brain to try to make sense of what his wife had said about this man that she thought was ‘sexy’.

be brutal and also inefficient and self-defeating to most individuals – and there would be no room for surviving and thriving for cooperative individuals who would be economically exploited and trampled underfoot. In particular, the economic coordination necessary for a complex society would not be possible.

Modern-day society is built on trust and the expectation that others will reciprocate – indeed, there is good evidence that our expectations closely match how people actually behave. Mervyn King, the former Governor of the Bank of England, noted in his 2016 book, *The End of Alchemy, Money, Banking and the Future of the Global Economy*, that economic systems work most effectively when trust can be assumed. Yet, lying and cheating in society are quite common, as shown by Dan Ariely’s 2015 film *(Dis)Honesty: The Truth about Lies*. We would be naïve to suppose that people do not use deceptive ploys in pursuit of their self-interests – in this regard, consideration needs to be given to *misinformation* in the market place designed to deceive other economic players. As we see below, with respect to economic games played in the laboratory, there is something of a Tom and Jerry cat-and-mouse game going on as economic agents struggle to gain an advantage, while at the same time trying to maintain social trust and harmonious relations. This tension leads to socioeconomic systems that are vulnerable to being

undermined, leading to economic inefficiencies resulting from suspicion and the erosion of social trust.

Despite these potential problems, we now know enough from evolutionary psychology to believe that, not only are we altruistic to our biological family – which makes good sense in terms of the ‘selfish gene’ perspective of protecting and propagating our genes (our own and those of close genetic kin) – but we have a form of cooperation called ‘reciprocal altruism’ (e.g., Trivers, 1971), which boils down to “you scratch my back, and I will scratch yours” (this is probably better called ‘reciprocity’ to distinguish it clearly from gene-based ‘altruism’). Trust is pivotal to this social process – but it is fragile and conditional.

The thing to keep in mind here is that no one is saying that human beings are truly *selfless* – like rationality, this is bounded and circumscribed (e.g., tit for tat; see text box). To get a reputation for being a cheat and not keeping one’s word would lead to social exclusion and, likely, retribution in some form. *Successful* long-term, prudent self-interest requires consideration of *other people’s* prudent self-interest. This demands some form of mutually acceptable social behavior regulated by social mores and enacted by agreeable *manners* – the nod to the driver who lets you out, or the person who holds the door open, oils the wheels of the everyday convivial, and ultimately efficient, social and economic life.

Despite recent claims that social manners have gone to rack-and-ruin (Bartholomew, 2004), such is our desire for harmonious social relations, we quite spontaneously coordinate our behavior to ensure this happens. This is seen on the London Underground. For example, at the Canary Wharf station, marks on the platform – which were put there for other reasons – are used by passengers for orderly queuing, and they also have the courtesy to leave open a channel for disabled and infirm passengers to go to the front of the queue. (We thank David McNeill, Director of Public Affairs and Stakeholder Engagement, at Transport for London, for this observation.) In fact, George Orwell observed much the same thing many years before, in *The English People* (1947), when he noted: “An imaginary foreign observer would certainly be struck by our gentleness; by the orderly behaviour of English crowds, the lack of pushing and quarrelling.”

TIT FOR TAT: A SUPERIOR EVOLUTIONARY STRATEGY

Derived from evolutionary theorizing and applied to strategic economic encounters, 'tit for tat' is important in game theory (see below) – the analysis of conflict and cooperation in which 'players' anticipate the reactions of others – and is relevant to such games as the repeated prisoner's dilemma (see below). Repeated experimental games confirm that this seemingly simple strategy is remarkably successful in optimizing payoffs (what one receives at the end of the game), and limiting losses. It consists of mirroring the other player's behavior: cooperate with your partner and keep doing this until they 'defect' or cheat, at which point withdraw cooperation. A simple but highly effective strategy to maximize cooperation because if the partner knows your intention then this will encourage them to continue to cooperate and not to defect or cheat. It works in love and war – knowing the reaction of your partner to your infidelity serves to curb straying; and the enemy is less inclined to 'first strike' if they know the consequences are assured – in the Cold War this was MAD ('Mutually Assured Destruction').

ECONOMIC GAMES (GAME THEORY)

One important way to explore economic strategic behavior is in the form of various economic 'games' (e.g., von Neumann & Morgenstern, 1944). These are highly structured strategic interactive games that allow hypotheses to be tested – for example, do people behave in a selfish or cooperative manner? We explore these games in more detail below. These strategic games can be 'one shot' (i.e., one interaction) or repeated (also called iterative), when game players have the opportunity to sample the behavior of their opponent – usually these games are adversarial and zero sum: one player's loss is a win for the other player, although cooperative behavior can lead to non-zero sum outcomes, as seen in the public goods game (see below) where contributions to the common pot are multiplied and benefit all players.

Indeed, it is easy to see the benefits of cooperative behavior in the context of repeated social interactions ('repeated games' or 'iterative strategy games' in the language of the experimental economics laboratory; see text box); but, as discussed below, even in 'one-shot' economic games, where there is no repeated interaction and no opportunity for retaliation, people are surprisingly cooperative and trusting.

EXPERIMENTAL GAME BEHAVIOR

Well, how do these social psychological processes play out in behavioral economics? Do manners and trust indeed matter? For a start, it would be peculiar, indeed, if they were unimportant. We can see this with experimental game behavior, which is the main way experimental economists test hypotheses in the laboratory (for a good introduction to game theory written in simple language, see Dixit & Nalebuff, 2008. Most of the economic games presented below are also described in Camerer, 1997). Let us consider first one standard 'game' used in experimental economics, the Public Goods (PG) game.

PUBLIC GOODS AND NON-SELFISH BEHAVIOR

The Public Goods (PG) game is one of the workhorses of experimental economics with considerable implications for behavioral economics. A public good is defined in economics as a good that is non-excludable (i.e., people cannot be denied use of it, for example, street lights) and non-rivalrous in consumption (i.e., if one person consumes street lighting this use does not diminish access of the good to others). Many public goods are provided by the government because it is close to impossible for private companies to avoid free riders (i.e., people who benefit from the public good because they cannot be excluded from its consumption, but refuse to pay for it). Other examples include national defense, police protection and light houses.

The basic PG game requires players to decide how much of an initial endowment (e.g., money, points or tokens) they want to give

to the common (public) pot – what they do not give they (selfishly) keep for themselves. One important aspect is that contributions are secret: the players do not see how much others give to the common pot when they make their choice. Whatever is contributed to the public pot is then multiplied by a factor (greater than 1 but less than the total number of players). The resulting public goods pot is then divided among all players. This is seen as an important game which is meant to reflect real life behavior related to taxation, charitable donations and more generally contributing to the public good of society.

Quite clearly (because of the multiplication factor), the total payoff of the group is maximized when all players contribute all of their endowment. However, when it comes to the individual player, the best strategy is to make a zero contribution: keep all of one's own endowment, but get the multiplied share of the other players' contributions. Such games may seem rather abstract and artificial but we can easily find real world examples. For example, taxation: it is best for society when every member pays the taxes they are supposed to pay. All members of society benefit from overall higher tax revenues because these are used to fund schools, the police and many other government services. However, an individual taxpayer can increase their own wealth by cheating on tax obligations while still benefitting from tax-funded government services. Cheating is, therefore, tempting for the individual (assuming that they do not end up in jail for tax evasion). Whether people do cheat in these games partly depends on how it is set up.

In the one-shot version of the PG game, as there is no chance for other players to retaliate and punish the selfish player, there should be no barrier to expressing maximum self-interest. To be clear, in neoclassical terms, the fully rational agent should be selfish and contribute *nothing* – in this one-shot game, their 'free-riding' behavior maximizes their (financial) utility. But, and this is the twist, all of the players know that the best strategy for each individual player is to contribute nothing. The *Nash equilibrium* (see text box) of the one-shot game is, therefore, for everyone to keep all their money and, thus, lose out on the potentially much bigger shared public pot. So, what actually happens in such a game? As a violation

of the expectation of selfish rationality of *homo economicus*, people generally do not give a zero amount, even in one-shot games. The amount put into the common pot varies from 0–100%, depending on the multiplication factor – however, it declines with repeated trials as players start to learn that others are not fully cooperating.

NASH EQUILIBRIUM

John Nash was the subject of the highly popular 2001 film, *A Beautiful Mind*. His mathematical formulation of strategic behavior in non-cooperative games won him the Nobel Prize in Economic Sciences in 1994. The Nash equilibrium is the cornerstone of theoretic games: it is defined as the best solution in non-cooperative games involving two or more players – that is, changing strategy would not lead to a better pay-off for one player while taking into account the best strategies of other players. In other words, the Nash equilibrium is the solution that maximizes each player's utility given the other player's behavior. To violate the Nash equilibrium is to violate the neoclassical definition of rationality – and often we do.

ULTIMATUM AND DICTATOR GAMES

Two other widely used games in experimental economics have much to say about how we judge fairness and inequality.

In the *ultimatum game*, the first player receives an endowment of money and then decides how they want to share it with a second player. This second player, called the 'responder', chooses to accept or reject the offer. The money is *only* given out to each player if the responder accepts it; but, if the responder rejects the division then the money is lost to both players. (This is usually a one-shot game so we do not have to worry about reciprocity, retaliation and the like.) Now, the rational thing might be for the responder to accept *any* offer made to them, as something (however little) is better than nothing. But, this is not how things typically work out. If too low an offer is made (in studies this is usually found to be less than 30%), this is likely to be rejected – in this case, the responder is

‘burning’ their own money to punish the selfish first player – evidence of spiteful behavior (we see below that monkeys do much the same thing). Of course, the first player knows this may happen – after all, they cannot be assumed to be stupid, and one of the basic assumptions of game theory is that a player considers the other player’s reaction – so they tend to make a fair offer of something greater than a third and rarely anything greater than a half (some people opt to give 50% in the interest of absolute fairness). As noted above, what people expect of others is pretty much in line with their actual behavior. All of this seems related to our aversion to inequality (see text box).

INEQUALITY AVERSION

Inequality aversion (also called inequity aversion) is often invoked to account for less than purely selfish behavior (e.g., Fehr & Schmidt, 1999). It is said to be a preference for fairness: a resistance to inequitable outcomes. Importantly, this is not only perceived inequality due to the action of others, but also when one has received a special favor: people may feel guilty or unhappy about their privileged position. Inequality aversion is considered vital for efficient social transactions. Such a self-injurious process enables an environment in which bilateral bargaining can occur. The argument is that without this rejection of perceived injustice, cooperation would not be sustained.

But what would happen if there were no chance of retaliation by the responder? To address this question, the *dictator game* was developed. In this game, the first player (the ‘Dictator’) decides how much of an endowment to share with a second player (who is not really a player because their role is passive and they have no say in the game: they get what they are given and cannot respond in any way). Surely, in *this* game, the rational, selfish player should give nothing? Although results vary, the fact remains that most people give away *some* of their money – children even tend to share 50/50. This selfless behavior is open to a number of interpretations:

1. Dictators fail to maximize their utility – they behave in a non-rational manner;
2. The utility function of Dictators may include social factors (e.g., negative effects on reputation and social standing);
3. The utility function of Dictators includes the benefits accruing to the second player, from which they derive some selfish utility in terms of ‘warm glow’.

In relation to points 2 and 3, we have seen as much in Adam Smith’s notion of the ‘impartial spectator’ which, as we saw in Chapter 2, was defined in terms of the idealized person we wish to please in our dealing with other people (it is a form of conscience). If point 3 is invalid, and the first player does not care about the utility of the second player, then they may have negative utility (disutility) related to being seen as a selfish and mean person. Indeed, when interpreting such laboratory experiments, a point that is often overlooked is that people *are* watching the game – if nothing else, the experimenter usually knows the decisions of the first player (or may be assumed to have access to this information).

The first player’s generosity varies between different set-ups of the game. For instance, in some variations the money that is allocated to the second player is placed in an envelope, which is meant to reduce people’s tendency to try to please experimenters and choose a socially desirable action (once again, the power of norms). It is less important for us to know *which* explanation is correct than to appreciate the fact that most people, *for whatever reason*, do not conform to the selfish (‘rational’) depiction of *homo economicus* (ECON) at least when it comes to the allocation of money.

THE PRISONER’S DILEMMA

Much the same cooperative behavior is found with the famous Prisoner’s dilemma, which has wide-scale implications for economics. The classic situation involves two culprits arrested for some crime. They are taken to the police station, isolated from one another, and interrogated separately – it is assumed that the decision of each suspect will not affect how their partner reacts to them in the future

(a dubious assumption in real life). The police know that they have rather weak evidence to expect a conviction on the more serious charge and if neither culprit spills the beans then they will have to charge them with a lesser offence. The police need one of the culprits to crack, confess all, and to 'rat out' their partner in crime. Now, if both culprits refuse to blame each other, then they can expect to serve only one year in prison as they will be convicted of the lesser crime. The police offer them a deal: if they 'defect' and rat out their partner who does not confess, they are set free and their partner serves three years in prison. However, if both confess they will both receive two years in prison. All possible combinations of actions by each player and corresponding outcomes can be displayed in a 'payoff matrix'.

The payoff below is defined in terms of the length of a prison sentence (shown as a negative sign). The terms 'cooperate' and 'defect' refer to the suspects cooperating with each other (i.e., if neither of them confesses) or defecting (i.e., not cooperating with the other player/confessing). The first value in each cell of the matrix shows the prison sentence that Suspect A might receive and the second value denotes Suspect B's potential sentence.

		Suspect B	
		Cooperate	Defect
Suspect A	Cooperate	(a) -1, -1	(c) -3, 0
	Defect	(b) 0, -3	(d) -2, -2

The strategy that yields the best payoff for a player regardless of which strategy the other player chooses is called the dominant strategy. In this example, it is for each player to defect (i.e., confess) as confessing results in the shortest sentence regardless of whether the partner cooperates or defects. Here are the possible outcomes:

- If A and B cooperate and do not confess, both get a 1-year prison sentence.
- If A confesses but B does not, A goes free and B receives a 3-year prison sentence.

- If A does not confess but B confesses, A will be sentenced to a 3-year prison sentence and B is released.
- If A and B both confess, both get a 2-year prison sentence.

If both partners could communicate they would surely decide to both remain silent, which is the socially optimal solution here – however, they would still have the dilemma of whether their partner would keep their word. (This would seem the game theoretic basis for the Omerta code of silence among crime families.) In any event, they have been isolated and, therefore, must guess what their partner's decision will be. The players' best strategies in the Prisoner's dilemma require little thought: defect! To understand this reasoning, think about what strategy suspect A should follow if they know suspect B will remain silent. In this case, they should confess, which would set them free and result in a 3-year prison sentence for their partner. How about if suspect A knows for sure that suspect B has decided to confess? In that case they should also confess because this would yield 2 years in prison instead of 3. Thus, in both scenarios the best strategy is to confess (e.g., defect). This is, therefore, player 1's (suspect A) *dominant strategy* and the same holds for player 2 (suspect B). As both players have the same payoffs, the Nash equilibrium is that both should defect. Findings from the experimental economics laboratory show that people often decide to cooperate: that is, they do not adhere to the selfish Nash Equilibrium – more evidence of neoclassical *misbehavior*.

Practical examples of the Prisoner's dilemma can be seen in arms races, companies spending too much money on advertising, and people acquiring too much education for the jobs they end up doing.

When thinking about such issues, what is of most relevance is the extent to which social factors of the type discussed by Adam Smith override self-interest when there is a big incentive to behave in accordance with neoclassical assumptions. We may well cooperate when there is little money 'on the table' (e.g., £10), but what about when there is £100,000 at stake? We cannot really know as, for reasons too obvious to state, no experiments of this type have been conducted! However, there have been some experiments conducted

in developing countries where (not very rich) players received fairly substantial payoffs (cheap for researchers, but a lot of money for them) – this can range from a pay equivalent of a laborer's wages for two days (commonly used) to several times their monthly expenditures. These studies are often cited to show that the amount does not matter (for example, the amount offered by proposers in ultimatum games in Indonesia does not seem depend on the money at stake; Cameron, 1999).

The game theory examples above show that in social situations people often do not choose the strategy that would likely maximize their (neoclassically-defined) utility. Instead, they remain silent in prisoner dilemma games, share money in dictator games and contribute to the common pot in one-shot public goods games. What all of these economic games have in common is that the players in the game need to consider the likely behavior of the other player. Players who remain silent in prisoner dilemma games seem to *trust* that the other player will do the same. Those who share their money in dictator games seem to care more about fairness than maximizing their monetary payoffs. They all appear to conform to social norms of trust, fairness and reciprocity. Manners and social factors matter – even in abstract economic games.

GROUP IDENTIFICATION

Another stark example of how we are influenced by social factors and how we very quickly identify with certain groups is shown in a series of classic psychological studies – these studies are of direct relevance for the economic behavior that we discuss below. One famous study is the Stanford Prison Experiment conducted at Stanford University in the early 1970s by Philip Zimbardo (Social Psychology Network (SPN), 2018). This experiment (which can be seen on the internet) shows just how quickly people abandon their own personal standards of behavior when placed in a highly constrained social environment – and the same holds for much less constrained environments. In this study, students who were randomly allocated to the role of 'Prisoner' became obedient and

those randomly assigned to the role of ‘Guard’ became abusive – the study had to be stopped because both prisoners and guards become deindividuated: they lost their personal moral compass and largely fell into their *assigned* social roles. Even the psychologist, Philip Zimbardo, was falling under the influence of these social pressures – his wife-to-be had to bring this to his attention as he was unaware of it.

So automatic are the processes of identification, group membership effects work even when the groups are formed in an entirely arbitrary manner. In the 1970s, Henri Tajfel pioneered the ‘minimal group paradigm’ (Tajfel, 1970). Before this is described, it is necessary to know that previous social psychological theories assumed that ‘in-group’ (love) and ‘out-group’ (hate) biases were the result of competition for actual resources and, therefore, could be seen in rational terms. But the ‘minimal group’ effect is different: just by being assigned to a group (e.g., the ‘green’ or ‘red’ group), in-group and out-group biases are shown. (Bear in mind that in economic transactions there are often implicit, sometimes explicit, groups.) All of this happens even though people know they have been allocated to these groups at random and the groups have no inherent meaning or consequence.

Consider a study conducted by one of the authors of his book. Corr and colleagues (2015) experimentally studied pro-sociality. The experimental twist in this study on the standard PG games was that participants played these games under two conditions: (1) with anonymous people; and (2) either with people who belonged to their assigned group or the other group – groups were labeled ‘Blue’ or ‘Red’ (these labels had no other significance – ‘minimal group identification’). The upshot of this study was that there was evidence of in-group bias, which harmed the out-group – although, in this specific study, this seemed to reflect ‘in-group love’ rather than ‘out-group hate’. The thing to note is that not a great deal was at stake in this experiment, but still minimal group effects were found in standard economic games used to study strategic behavior. Just imagine the implications of such findings for everyday economic transactions?

SOCIAL NORMS

Perhaps the most pervasive social influence on our behavior comes in the form of social norms.

Part of the appeal of the 1719 novel by Daniel Defoe, *Robinson Crusoe*, is the idea of being alone on an island, cut off from the rest of the world and having to rely upon one's own resources. This is very unlike everyday life where we look to others for guidance as to how we should behave. There is now a vast literature on 'norms' in social psychology which attests to the fact that we are heavily influenced by what we think *other people expect of us*.

Social norms are the accepted (though unwritten and usually not articulated) rules of behavior. They lead to *compliance*, *obedience* and, once they become internalized, *conversion*. They are usually communicated and received implicitly; that is, without the need for cognitive deliberation. Indeed, most of the time we are not even aware of their existence – at least not until we violate them and, then, in short measure receive feedback from other people (e.g., try jumping the queue at a train station to experience this social psychological process in action – actually, don't!). A common form of punishment for a rule violation, and a very effective one for most people, is social exclusion – in common English parlance, "sent to Coventry". Research shows that exclusion and 'social pain' share much in common with physical pain (e.g., MacDonald & Leary, 2005).

Learning these social rules occurs largely by vicarious means: by observing others and emulating their behavior. Norms tend to be socially contagious and positive reinforcement (i.e., being rewarded) for norm-following behavior strengthens them. Negative reinforcement (i.e., being punished, or not being rewarded, for not following them) also serves this strengthening function. Norms can establish bad behavior (e.g., littering) as well as good behavior (e.g., recycling). None of this has to be explicit or obvious, and it need not even entail providing people with 'information'. Much more effective are examples of good norm following behavior which many people emulate in an automatic manner – "it's the way things are done around here!" After a time, such behavior becomes habitual and automatic, and it is seen as the 'right' way to behave – this is especially

important in *nudge* interventions (see Chapter 6). Social norms serve a number of usual social functions.

- They help to reduce uncertainty about how to behave appropriately – just follow the example set by other people!
- They help to coordinate the behavior of individuals, which reduces ‘cooperation losses’ for other group members (e.g., the cost of the lack of punctuality).
- They constrain an individual’s impulsive responses.
- They reduce cognitive and emotional ‘load’ (that is, placing a processing burden on the system which consumes processing resources and requires effort control).
- They facilitate group cohesion.
- They reduce uncertainty in ambiguous situations.

In other words, social norms promote social efficiency.

The influence of social norms is especially powerful in the context of ambiguous stimuli. This is shown by the ‘autokinetic effect’ (see text box); however, we should not assume that they work only

AUTOKINETIC EFFECT

Imagine you are seated in a dark room and there is a spot of light on the wall facing you. Also imagine you are asked to estimate how much the light is moving about – the ‘autokinetic effect’ is the apparent movement of a stationary light (it seems to move because there are no visual reference points in the environment). If you do this estimation task alone you would have your own ‘personal norm’ around which there would be some variation. This will differ from other people’s personal norms. But, if you were to do this estimation task with other people, then what happens is that a ‘social norm’ is established: group members converge on an average (e.g., Sherif, 1935). What is now remarkable is that when you, once again, undertake the task alone you use this social norm and do not develop your own personal norm. This is a simple, elegant and important demonstration of how we come to personalize social norms. If this happens with simple physical stimuli, just imagine what happens with complex social ones?

in such contrived and artificial situations. They are likely to be influential wherever and whenever the content or the information presented is complex or ambiguous; or, indeed, when the effort to process such information is deemed too much and following the crowd is seen as the easy route.

MONKEYS: THE EVOLUTION OF SOCIAL BEHAVIOR

The persistence of social norms long after the reasons for why they were established in the first place are gone is shown by a monkey experiment (see text box). This is only one example of many which show that monkeys behave in a similar manner to *homo sapiens* in their economic behavior.

Another important social psychological phenomenon is that of social comparison – which can be found in (wo)men and monkeys. In the case of humans, this was elegantly shown by a study on *positional standing* in which Solnick and Hemenway (1998) asked people which of two worlds they preferred (dollars have been changed to pounds).

World A:

Your current yearly income is £50,000; others earn £25,000.

World B:

Your current yearly income is £100,000; others earn £200,000.

(It is assumed that prices and thus the purchasing power of money are the same in the two world states.)

The finding is that approximately 50 percent of the respondents prefer World A, in which their real, absolute income is lower than in World B, but their *relative* income position is high. Although respondents can only purchase half of the goods and services in World A than they could purchase in World B (prices are the same in both world), what appears to be of greater importance is that they can purchase more than their neighbors. Their positional standing matters. However, we do not know whether they would make the same choice if this were a real situation; yet the assumption is that the same outcome would be found.

What is interesting is that something similar is found in monkeys, which suggests that the cognitive, affective and behavioral phenomena that occupy behavioral economics may not be unique to human beings.

FIVE MONKEYS EXPERIMENT: SOCIAL NORMS

This is a well-known account of an experiment, although it seems never to have taken place (Maestripieri, 2012). It is still instructive as an amusing story of how social norms get transmitted. It is also a rather good example of how information in the form of such a story is appealing and people are willing to pass it on – this is an example of a ‘meme’ which refers to the social transmission of information which is facilitated when it is framed in a certain way (another example, is ‘rhyme as reason’; see Glossary).

Here is the story. Five monkeys are placed in a large cage. High up at the top of the cage is a bunch of bananas that the monkeys love to eat, but they are beyond their reach. However, help is at hand in the form of a ladder. Being smart, the monkeys work out that they can climb the ladder to get the bananas. But as one monkey climbs the ladder the experimenter sprays him with a stream of cold water; and then he sprays each of the other monkeys – this they find very unpleasant. All five wet, cold monkeys wait until the temptation is too great. Another monkey tries his luck and is promptly punished with a spray of cold water. The monkeys have now learned that the consequences of trying to reach the bananas are dire and prevent a third monkey from doing so in order to avoid the cold spray. Now here is the twist: one monkey is removed and a new monkey is introduced into the cage who immediately begins to climb the ladder. He is pulled off by the other monkeys. Then, the experimenter replaces another of the original monkeys with a new monkey who does not know about the cold water. The other monkeys pull him off when this new monkey attempts to reach the bananas. Surprisingly, the other new monkey who arrived just before him, *and has never been sprayed*, participates! After a short while, the social norm is not to climb the ladder to the bananas, but none of the newly introduced monkeys has a clue why – if they could talk, they might say: “it’s just the way things work around here!”, much the same way as humans.

In 2003, Sarah Brosnan and Frans de Waal showed that capuchin monkeys rebel if they see another monkey getting a reward that they consider to be more valuable – the same is found with dogs and birds. (Capuchin monkeys diverged from the homo sapiens line some 35 million years ago; and although they share many human cognitive strategies they were isolated in terms of linguistic, cultural and technological systems which are sometimes thought to distort human judgement and decision making.) Monkeys were trained to trade pebbles for slices of cucumber, which they found to be an acceptable reward. But, when they saw another monkey getting paid with much more desirable grapes, they got agitated, threw pebbles and eventually refused to work. *Very human like!*

What such experiments seem to show is that monkeys and people are less concerned with *absolute* levels of wages, standard of living, and so on, but with their *relative* social standing. In neoclassical terms, this does not make sense: in absolute terms, more of something is always better than less, irrespective of what other people are getting (see Chapter 3), *assuming all else is equal*. But, in social psychological terms, this simply is not the case.

Something similar was found in further related research work by Frans de Waal who showed that capuchin monkeys refuse to ‘work’ if they feel they are getting an unequal share of the reward (described in Fisher, 2006). The ingenious experimental set-up involved a heavy tray that needed two monkeys to pull. This tray contained food that was available only to one monkey, called the ‘CEO’. The CEO decided how much food to push through a mesh to the ‘worker’. Typically, the CEO kept about five times as much food as the worker; but, if they kept any more than that the worker would go on strike and refuse to help, leaving both monkeys hungry. This monkey behavior is very similar to the ‘money burning’ (spiteful behavior) that is often seen in economic games in the laboratory (see above).

In another study concerned with ‘monkeynomics’ (you can find an interesting TED talk on the topic by Laurie Santos online, 2010), capuchin monkeys were trained to use shiny metal disks in a similar manner to how we use money. (In passing, it is interesting to note that gold and silver were the shiny metals that long served the

function of money in human society – this is well discussed in Adam Smith's 1776 *The Wealth of Nations*.) Similar to human beings, capuchin monkeys responded to price changes by changing their patterns of consumption. They also quickly learned that tokens could be used in exchange for sex – one of the first demonstration of prostitution in the non-human animal world (maybe it is the oldest profession!).

In Chapters 3 and 4, we saw how we tend to be risk averse and often prefer a sure gamble over a riskier outcome with a higher expected utility. Monkeys behave likewise. In addition, studies of horse race gamblers and day traders show that when we are in the 'domain of loss' we tend to prefer greater risk (see text box); and so do monkeys. Like (wo)man, monkeys also display signs of money illusion, loss aversion and the endowment effect, and they are also reference dependent resulting from the framing of problems as entailing loss or gain (see Chapter 4)

RISK LOVING UNDER LOSS

Consider the following. Would you choose to *lose* £500 for sure or a 50% chance to lose £1,000 (probability 0.5)? Most people prefer to lose £1,000 with a probability of 0.5, indicating they are 'risk loving' with respect to losses. (Tversky & Kahneman, 1981, posed similar questions.)

MOODS: TRANSIENT STATES AND PERSONALITY

Situational factors are well known to influence transient states and behavior. Psychologists have confirmed this in the laboratory and we know this from our own everyday life: some things can delight or disturb us, and these feelings then permeate everything we think, feel and do during the rest of the day. We might even 'get out of the wrong side of the bed' and be in a bad mood. A rather good example of how physiological states can affect preferences is revealed by hungry office workers (see text box).

HUNGER AND PREFERENCE: APPLES AND CHOCOLATES

An interesting and informative experiment was conducted by Read and van Leeuwen (1998). Office workers were approached either just after lunch (when they were not hungry) or in the late afternoon (when they were). They were offered a choice of snacks that would be delivered at a fixed time (just after lunch or in the late afternoon) *a week later*. Some of these snacks were ‘healthy’ (e.g., apples), others ‘unhealthy’ (e.g., Mars bar). We need to note that when the offer is *now*, most people would prefer fruit immediately after lunch but chocolate later in the afternoon. The results showed that, irrespective of the *delivery time*, individuals were more likely to choose unhealthy snacks if the choice was made in the late afternoon. The difference in choice has a psychological cause: people are hungrier in the late afternoon and thoughts about the hunger-satisfying properties of food are, therefore, more salient to them.

EMOTIONS

Emotional associations can powerfully shape our judgements, decisions and behavior. This fact has been apparent to economists, for example, John Maynard Keynes who stated in his highly influential 1936 *General Theory* book that financial markets are moved by ‘animal spirits’.

Emotion (to a specific stimulus) and mood (non-specific positive–negative feelings) influence decision making – for example, by changing the computation of perceived gains and losses. We are influenced by ambient affect (e.g., financial trading with background music) as well as instrumental affect (perceived feelings of good and bad outcomes of financial trading). Emotions are automatic and difficult to control – often, the real source is not known, but post-hoc inferences are drawn and emotion is ‘labeled’ for social and personal meaning (reference points and frames are influential in this context too; see Chapter 4).

To appreciate these subjective feelings, consider the ‘gut feelings’ of financial traders. This is a feeling – more akin to an intuition – that seems to convey information about the market. Famously, George Soros said that he uses a combination of rationality and gut feelings to guide his decisions. In his 1995 book, *Soros on Soros: Staying Ahead of the Curve*, he wrote:

I rely a great deal on animal instincts. When I was actively running the fund, I suffered from backache. I used the onset of acute pain as a signal that there was something wrong in my portfolio. The backache didn’t tell me what was wrong – you know, lower back for short positions, left shoulder for currencies – but it did prompt me to look for something amiss when I might not have done so otherwise.

Soros’s strategy stands in contrast to the usual advice given to traders, namely that they should stick to a proven method and stay disciplined – they are usually advised to ignore gut feeling and base their decisions on the analysis of market information. But their intuition need not be anything magical. Many traders have such a sense. It reflects the trader’s years of accumulated knowledge and experience. One way of looking at the mind and the brain is to view them as a highly sophisticated pattern recognition machine. With sufficient time and attention, regularities are observed and (apparent) causal relations deduced. All of this occurs at an automatic level – in psychology, this is often called ‘procedural learning’ and it has been extensively studied. What we are left with is a ‘feeling’ that something is right or wrong, but it is very hard to put it into words: this is the body’s way of communicating to the mind that a definite action is required.

What mood, affect and emotion do is to create widespread activation which biases thinking and behaviors in the direction of defensive reactions (e.g., fight, flight, freeze) or approach (exploratory curiosity and reward seeking) – the twin levers of the market: fear and greed. This perspective is very much in accordance with Daniel Kahneman’s (2011) view: “. . . rewards and punishments, promises and threats, are all in our heads. We carefully keep score of them. They shape our preferences and motivate our action . . .”.

‘Gut feeling’ may have a rather literal meaning. In 2016 Narayanan Kandasamy and colleagues reported a fascinating study that throws light on this phenomenon. They found that successful financial traders were better than a sample of the general population at ‘reading’ their own bodily (interoceptive) sensations – furthermore, the better this ability, the better their trading decisions. The sample comprised 18 male traders who engage in high-frequency trading (buying and selling futures contracts and holding them only for seconds to hours). Traders were assessed on their ability to detect their own heart beat – the control group (in this case, the comparison group) were students. The ability to perform this task was also related to the number of years the traders had survived in the profession.

What is going on is difficult to discern. It could be that people who are more sensitive to their own physical processes are also more sensitive to the external world and, thus, they learn more – they are more ‘attuned’ in some sense or, less abstractly, superior at implicit, procedural learning. Other explanations are possible too. Successful traders may be more stressed and thus their heart beats are more obvious to them. Or successful traders keep themselves fit (e.g., go to the gym regularly) and this makes them more sensitive to their bodily processes. Irrespective of the reason, sensitivity to bodily states is related to financial trading success – a finding that lends credence to the notion that gut feelings may be important after all.

EMPATHY GAP

There is something else about experienced emotional states that bias our thinking about the present and future. We have seen elsewhere in this book that the classical economist, Adam Smith, placed great emphasis on the notion that we regulate our social behavior because we ‘sympathize’ with other people – today, we would say that we ‘empathize’. There is a literature on empathy and its gaps which tells us something important. The ‘hot-cold empathy gap’ is a cognitive bias which reflects the fact that people underestimate

the influences of visceral experiences on their behaviors and preferences. This idea, made popular by George Loewenstein (e.g., Loewenstein & Schkade, 1999; Loewenstein, 2000), states that when we are in some state (e.g., happy), we find it difficult to appreciate what it is like to be in the opposite state (i.e., miserable). This affects how we behave in relation to other people: we often cannot empathize sufficiently with them (e.g., we may be insensitive to their feelings). But, it also influences how we see our present and future selves. Being in one state *now* makes it hard for us to appreciate how we could be in another state. We tend to underestimate the impact of being in another state.

For example, in one of many studies that examine the empathy gap, young men in an unaroused ‘cold state’ could not predict accurately that in a ‘hot state’ of sexual arousal they would be more prone to risky sexual behavior (Loewenstein, Nagin & Paternoster, 1997). Such findings mean that when we process information about the future we may be systematically biased by the state in which we happen to be in – for example, smoking that cigarette which is giving us pleasure *now* over-shadows the displeasure it may bring in the future.

PERSONALITY

Personality affects our characteristic ways of thinking, feeling and behaving across different situations and over time. One very popular descriptive model of personality is the ‘Big-5’ (e.g., McCrae & John, 1992; see text box).

There is an interplay between situational and personality factors. This means that the way we react to a situation depends on our personality. For example, given the *same* situation, people show different behaviors. The reason for this is that genes and physiology are important to how the mind works – and there are individual differences in its workings. We should assume that all social influences must go through the brain for them to exert any influence. Differences in brain function, therefore, give rise to individual differences in personality, intelligence and the like, and determine how we respond to external events (e.g., economic incentives). Crucial here

BIG-5 PERSONALITY

At the most general level of description, there are, at least, five factors of personality:

Extraversion (E): outgoing/energetic vs. solitary/reserved

Neuroticism (N): sensitive/nervous vs. secure/confident

Openness (O) – sometimes ‘intellect’: inventive/curious vs. consistent/cautious

Conscientiousness (C): efficient/organized vs. easy-going/careless

Agreeableness (A): friendly/compassionate vs. cold/unkind

These factors are derived from complex statistical analysis of the correlations found between personality-relevant words (e.g., warm, hostile, friendly, diligent and creative). Although the Big-5 model is not without its criticisms, it is widely used in research across the whole of psychology.

is the claim that these individual differences in brain (and, therefore, mind) functioning affect the perception and analysis of the ‘environment’ – more formally, the ‘environment’ is *constructed* in the brain/mind. As the famous psychologist Hans Eysenck said in 1998: “Our environment is *structured* by ourselves, on the basis of genetic drives”. As an example of this fact, some of us see the world, as it were, through rose-tinted glasses, while other peoples’ hue is distinctly blue.

In relation to the one-shot Prisoner’s dilemma, Pothos and colleagues (2011) found that high reward-responsive (i.e., a personality factor relating to sensitivity to reward; the goal of the trait is to maximize rewards) individuals are more likely to defect when the optimal strategy is to do so. In contrast, high agreeableness individuals are more likely to cooperate in situations in which the optimal strategy calls for it (high agreeableness is associated with cooperation). In both cases, the behavior is consistent with the goal of each trait.

PERSONALITY AND EMPLOYMENT

On the larger economic scale, there is emerging evidence that personality is important too. For example, Daly and colleagues suggest in a 2015 study that “the capacity for self-control may underlie successful labor-force entry and job retention, particularly in times of economic uncertainty”. Taking into account intelligence, social class and gender, they found that a low-level capacity for self-control in childhood is related to unemployment across forty years. (The issue of self-control in economics has fascinated Thaler, who in his 2015 *Misbehaving* book elaborates on this theme – to be a good neo-classical agent, a high level of self-control is most certainly vital!) Similarly, higher levels of conscientiousness (being efficient/organized), as measured at age 16–17, predicted levels of later-life employment in another study (Egan et al., 2017).

Maybe people do indeed optimize the allocation of their scarce resources to maximize their utility, as assumed by neoclassical economics. However, their economic preferences (i.e., what supposedly brings them the highest utility) may well depend on personality factors. This means that people may differ markedly in the ordering of their preferences and, therefore, a one-size-fits-all economic model is inadequate. It may also mean that, depending on personality-related preferences, different people may have very different reactions to incentives, information, context, and so on. This may work at the micro-level of social interactions (e.g., in experimental games), as well as at the macro level, for example, how people react to the incentive structures of employment and state-provisioned social welfare.

Although much more work is needed to explore the extent of personality influences on economic behavior, leading economists are starting to incorporate personality processes in their formal economic models. Many psychologically-inclined economists would now agree with Becker and colleagues’ (2012) statement (here, heterogeneity refers to diversity/variety):

What is needed is the development of a comprehensive framework that combines insights from the approaches taken by economists and psychologists to capture sources of heterogeneity in behavior.

We can now see how emotion, personality and the like influence our judgement and decisions, and they can also cloud our perception of our own behavior. This is shown in one of the earliest examples from the Ancient World. In one version of Aesop's, *The Fable of the Fox and the Grapes*, driven by hunger a fox tries to reach some grapes but they are hanging high on the vine and out of his reach. Having failed to reach them he declares "*Oh, you aren't even ripe yet! I don't need any sour grapes.*" This story is used to characterize people who talk disparagingly of things they cannot attain themselves, but the main point for us though is that the fox engages in face-saving defensive behavior which has little to do with the fact that he wanted the grapes in the first place. His expressed preference is now the *consequence* of his (failed) action! This is an example of the social psychological literature on cognitive dissonance (see text box).

COGNITIVE DISSONANCE

Festinger (1957) discovered that people change their attitudes/beliefs to be consistent with behaviors they have performed, even ones they initially disliked (e.g., working on a highly boring task). Performance on such a disliked task induces conflict ('dissonance'), which is an aversive state which people will work to escape – they can do this by coming to believe that the task was, in fact, interesting. Of importance, this change in attitude is not induced when people are highly financially incentivized, showing that such incentive can lead to extrinsic, not intrinsic, motivation. The psychological notion is that people want to maintain consistent attitudes/beliefs and behavior, and they are motivated to eliminate cognitive dissonance, however induced. (There are excellent resources available on the internet.)

CONCLUSIONS

Social factors in economic behavior were at the forefront of Adam Smith's seminal thinking at the time he inaugurated what was to become known as classical economics. Subsequent research has done nothing to dampen the relevance of these factors, and much of

behavioral economics confirms them. It is especially newsworthy that people have a definite propensity to be cooperative and, typically, they do not behave in an entirely selfish manner (at least when it comes to money), even when it seems to be in their best interests to do so (e.g., in the Dictator game, where the second player is powerless). However, these forms of selfless behavior may be impure in the sense that they may serve the longer-term interests of the economic player – especially in situations when there is the opportunity for punishing defectors (as is, indeed, the case in many real-world contexts). Nevertheless, we seem to derive personal utility from helping others: we have a social preference based in *inequality aversion*. Indeed, such is this tendency, we are willing to punish, sometimes by burning our own reward (as seen in the Ultimatum game), those who violate unwritten rules of socially acceptable conduct – we expect good *manners*. We have seen that such behaviors may have evolutionary roots as monkeys display some of the same behavioral economic propensities as human beings. In all of this, we need to take account of situation-specific emotion, affect and mood, as well as longer-term propensities as expressed in personality factors (e.g., agreeableness).

All of these issues will be elaborated in the remaining two chapters, where we survey two major applied fields: government policy making and ‘nudge’ interventions; and commercial (and political) strategies designed to influence the consumer (and the voter).

FURTHER READING

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NUDGE WHYS, WAYS AND WEASELS

We now know that we do not always act in rational ways, *even as judged by ourselves*. We seem to get things plain wrong, misjudge, base decisions on irrelevant information, and sometimes act plain silly. This has perplexed mainstream economists, but inspired behavioral ones (see text box). This state of psychological and economic affairs raises an important question: should government protect us from ourselves by the use of scientifically-valid strategies to *nudge* us in more desirable directions? Many governments around the Western world have thought it is, indeed, their responsibility.

All of this was brought to the public's attention by the highly successful and influential 2008 book, *Nudge* by Richard Thaler and Cass Sunstein – the subtitle *Improving Decisions About Health, Wealth and Happiness* captures its purpose very nicely. As we see below, this approach is not as unproblematic as it may seem at first blush. But, for now, it would seem uncontroversial to help people make better decisions for themselves, their family and wider society.

This is not especially new. Psychologists were never much taken with the notion of the abstract rational economic agent who seemed to live only between the pages of the standard economics textbook.

DIFFERENCES BETWEEN STANDARD ECONOMICS AND BEHAVIORAL SCIENCE

Standard economic practice depends on three main tools to influence behavior: (1) information/education; (2) financial incentives; and (3) regulation. In contrast, psychological approaches depend on: (1) framing, formatting, timing of messages; (2) behavioral and social incentives; and (3) nudges. According to nudge philosophy (Thaler & Sunstein, 2008), nudges retain freedom of choice (liberty-preserving); do not involve coercive means such as bans or regulations; and do not alter economic incentives - they can be developed using insights discussed by behavioral economics research, which relies upon the broader field of judgement and decision-making.

For example, in 1901, Freud devoted a book to *The Psychopathology of Everyday Life*; and in academic psychology, whole sub-fields are devoted to our less than rational behavior.

If further evidence is needed, consider the large literature on procrastination – we all too-readily put off until tomorrow things that really should be done today, and then we waste time ruminating on this fact! Of importance, we even behave in this manner when it comes to important life decisions (e.g., saving for retirement); and we seem neither to notice nor care that, on an everyday level, small things accumulate to become larger ones. Too many of us postpone going to the gym and then wonder why we are not losing weight and getting fitter; we abandon New Year's resolutions, often before we have taken down the Christmas tree; and there are countless other examples of how we act non-rationally – at least, as defined by neoclassical economics (see Chapter 3). We conform to Oscar Wilde's witticism (1983): "I can resist anything except temptation". As evidence of this fact, we have a marked impatience for rewards and postpone the costs of decisions until the future; these tendencies are reflected in a need for instant gratification and procrastination – these psychological propensities form the basis of the credit card industry. Rather than wait for a larger but later reward, we prefer

smaller sooner benefits – in the lingo of the behavioral economist: we are *present biased*. As many years ago David Hume opined:

There is no quality in human nature which causes more fatal errors in our conduct than that which leads us to prefer whatever is present to the distant and remote.

(Hume, 1738)

Helping people to correct their bad decisions is especially relevant in financial life where the cost of mistakes is high for both the individual and society. Pension provision is one such area. Too many of us fail to save enough (or anything) for retirement, even though this is an excellent tax efficient way to put money away for the future – designed by mainstream economists. We seem too prone to agree with the rose-tinted worldview of the character from Charles Dickens's 1850 novel, *David Copperfield*: Mr Macawber, “something will turn up” – but for many retired people the only thing that turns up is relative poverty.

(Dickens had personal experience of the consequences of this worldview: Mr Macawber was modeled on Dickens's own father who ended up in debtor's prison.)

This chapter has several aims. First, to describe ‘nudging’; second, to discuss the ways it is applied; and, third, to present some of its problems, even dangers. These are the *Whys*, *Ways*, and *Weasels* of the alliterative subtitle – a ‘weasel’ is a term used in the advertising world to refer to *suggestio falsi* (Ogilvy, 1963 – see Chapter 7). We also consider the importance of subjective well-being in terms of governmental attempts to enhance human welfare, and how this approach may overcome some of the problems associated with the nudge philosophy and approach.

WHAT IS NUDGING?

The concept of nudging is based on the notion that people do not make good decisions *in terms of their own preferences* and, therefore, fail to maximize their utility – this is a deeply unsettling notion for neoclassical economics. What this means is that our ‘revealed

preferences' do not reflect our *true* preferences – as we saw in Chapter 3, in mainstream economics, preferences are identified by such *manifest* behavioral choice. We go about our business in less than satisfactory ways – in economic terms, we are being inefficient and wasting scarce resources (in terms of time, effort, emotion, opportunity costs and so on). All of these things seem perfect targets for a nudge.

According to Sunstein and Thaler (2008), “A nudge is any aspect of the choice architecture that alters behavior in a predictable way without forbidding any options or significantly changing their economic incentives. A nudge must be easy and cheap to avoid.” The emphasis is upon the availability of choice, and altering people's judgements, decisions and behaviors should not impose significant costs on the chooser in terms of time, social sanctions, effort and such like. Importantly, a nudge should allow people to perform rationally in terms of their own self-declared interests – according to Nudge, it is *not* for the choice architect to decide what is best for them. As we see below, this assumption is contested.

It remains a matter of debate whether people should be nudged, but if we want to achieve behavior change, how should we go about the task? For a start, to change real behavior it is often not enough simply to provide people with the option to alter their behavior – sometimes, they just ignore it. Nor it is enough simply to provide more information about the consequences of following option A over B. How many smokers *really* do not know the very serious health consequences of their habit? What more information could be given to them to change their behavior? There is a psychological barrier here. We know that human beings have a wonderful facility to ‘wish away’ unpleasant outcomes – indeed, there is a whole social psychological (‘cognitive dissonance’) literature devoted to this very topic (see Chapter 5). This shows how we easily change attitudes, beliefs, etc. to maintain consistency with our behavior – contrary to what is commonly believed (i.e., attitude/belief leads to behavior).

MR MCCAUBER NUDGED

Returning to the case of pensions, government-inspired attempts to get more people to save for retirement have been hailed as one

of the finer achievements of the nudge approach, and with some justification. Since 2012, in the United Kingdom under the 2008 Pensions Act, firms are required to enroll their employees automatically in a pension scheme – this started with larger firms but since 2018 applies to all firms. This is a good example of the power of ‘defaults’ – going with the flow (see below). If employees want to opt out of the pension scheme then they are at liberty to do so but they will be required to expend effort, emotion, cognitive resources and time. The idea is that because we are all prone to cognitive laziness, not many people will pursue this option, and this, indeed, has proved to be the case: as a result of this recent law, vastly more people are now in a pension scheme and comparatively few have bothered to go through the psychological trouble of opting out – they may stay in the scheme because they clearly see the benefits, but these benefits were not salient enough to encourage them to opt-in before the nudge intervention.

NUDGE AND STANDARD ECONOMIC POLICIES

Nudge policies stand in contrast to the typical toolkit of the policy maker who has relied upon taxing behavior that is deemed undesirable (e.g., taxes on cigarettes) and subsidizing behavior that improves well-being (e.g., tax relief on pensions). Taxes and subsidies work well in some domains of life by changing the costs in a typical cost-benefit calculation – this is very much along the lines of the ECON model. However, these incentives are economic and do not account for the importance of the social context in which decisions are made. Nudge capitalizes on the fact that some behavior change programs are more successful when networks and peers are involved, who often function as a commitment device – this is designed to help HUMANS adhere to their goals and come in many different forms (e.g., Brocas, Carrillo & Dewatripont, 2004). For example, they may be social: declaring to everyone who is willing to listen that you are going to give up smoking or lose weight – if you fail in this publically announced goal, then you have psychological egg on your face: an example of a loss aversion motivated compliance with the self-avowed goal.

To achieve behavior change, government could well choose ‘hard’ measures such as regulations, mandates and bans, which force citizens and corporations to adopt or avoid certain behaviors. For instance, in the UK it is an offence to smoke in certain designated public places. The prospect of paying a steep fine certainly deters many people from violating this regulation. Hard measures are usually employed when behavior is seen to be detrimental to society and needs to be avoided. But there are whole areas of human behavior where standard policies are particularly ill-suited. For example, getting people to eat more healthy food, exercise more, drink less, and so forth. To use coercive means to affect change in these areas would not be politically viable, and would probably not be effective in any case. In such areas, the other option in the government’s tool box is to relay on ‘soft’ measures, such as voluntary agreements which do not incur a penalty if violated.

The UK government has used subtle tactics to encourage people to get back to work (for an example, see text box). It must remain a matter of opinion whether we should think this is a dubious application of psychological science or a harmless trick to help people to re-enter employment – the choice architect could retort: “As we are going to send a letter in any case, why not design it for maximum effectiveness?”

Other forms of nudges are much less problematic. A delightful example of a gentle nudge was seen at Odenplan metro station in Stockholm, Sweden, where the stairs to the side of the escalator contained touch sensitive pads designed to represent piano keys. As people walked up the stairs piano notes played. This was fun, novel and encouraged people to use the stairs – in fact, 66% more people than normal used them. (This can be seen on the internet.)

CHOICE ARCHITECTURE

If information by itself is not sufficient to alter behavior, what is more effective? What is often needed is not only a change in people’s knowledge, but a change in the environments in which they make choices: this entails the concept of *choice architecture* which describes the careful design of how *choices are presented* (Thaler & Sunstein,

PERSONALIZED LETTERS TO THE UNEMPLOYED

As reported by the BBC (Easton, 2015), the Behavioural Insights Teams were asked if they could get more unemployed people to come to job interviews. To test the effects of several types of messages, they sent different versions of an invitation to a job interview to unemployment claimants. The first text was simple, telling claimants about an interview:

“Eight new Customer Assistant jobs are now available at Tesco. Come to Bedford Jobcentre on Monday 10 June between 10am and 4pm and ask for Sarah to find out more.”

About 11% turned up. The second message was exactly the same, but they added the claimant's first name, for example: “Hi Sam, eight new Customer Assistant jobs are now available at Tesco . . . ”

The percentage of people turning up to the interview increased to 15%. The largest increase in interview attendance, increasing to 27%, was observed when the Jobcentre adviser signed the message and wished the claimant good luck:

“Hi Sam, eight new Customer Assistant jobs are now available at Tesco. Come to Bedford Jobcentre on Monday 10 June between 10am and 4pm and ask for Sarah to find out more. I've booked you a place. Good luck, Michael.”

This small, but highly effective change, which simply consisted of adding a personal touch to the message, is now used by every job center in the country. Maybe the claimants simply needed to feel that somebody cared about their future.

2008). There is now ample evidence that making food portions, food packages and even plates smaller reduces how much people consume – even eating off a red plate reduces consumption (for further examples, see Chapter 7). The point is that nobody is being told, let alone compelled, to make a specific choice. For example, in a nudge-designed cafeteria, no one is stopping anyone from consuming as much unhealthy food as we can shovel down their throats! This is an important point in the philosophy of nudge. We are still *free to choose* – to use the title of one of Milton Friedman's

most popular neoclassically-based books. Instead, *choice architecture* exposes us to subtle cues that guide us in one direction (to healthy fruit) and away from less desirable foods (chocolate bars) – if we want to go our own way, we are at liberty to do so.

In the specific example of a cafeteria designed by a choice architect, and following the social psychological principles discussed in Chapter 5, people can be nudged to assume that the *social norm* is for a plate of food to be of a certain size or contain a collection of items (e.g., vegetables and fruit). People do not need to be told this explicitly; all they need is the opportunity to observe and learn from others, and be reinforced for adhering to this social norm. Then, it is hoped, they will adjust their expectation of what constitutes an adequate food portion, and they will pass this norm on to other people. A useful way to think about formulating the nudge problem and solution is given by the BASIC model (see text box).

BASIC NUDGE MODEL

A way of identifying behavioral problems that may be amenable to a nudge intervention is given by the Danish organization iNudgeyou, which use the BASIC model to design interventions. The acronym stands for: B = behavioral mapping: collecting data to define the problem – the *what* phase. A = analysis: why people are currently behaving as they are – the *why* phase. S = solution mapping: this is the scientific and systematic process of making suggestions – the *how* phase. I = interventions – this is the testing of possible nudge solutions before full implementation – this is the *test* phase. Once a nudge intervention has been selected, there is then C = Continuation: solutions may fail due to poor implementation or lack of maintenance, so a process of on-going monitoring of the success of behavior change is needed, as well as an evaluation of possible unforeseen side-effects – the *results* stage. An approach such as BASIC is needed whenever nudging is being considered – jumping from general knowledge to specific behavioral problems is fraught with problems. An excellent example of the application of BASIC is seen in the nudge intervention to move smokers away from entrances at Copenhagen airport (Schmidt et al., 2016).

EVIDENCE-BASED POLICIES

There is now a growing recognition that government policies should be evidence-based, meaning that they should be informed more by (empirical) data than (political) dogma. The effectiveness of nudges has been demonstrated in a number of randomized controlled trials (RCTs). RCTs are a very important tool for researchers and policymakers to evaluate if nudges are, indeed, effective. But how does an RCT work?

The participants in a typical RCT are *randomly* assigned to two (or more) groups, and these groups are subjected to different conditions (e.g., the treatment group may receive a certain message, whereas the control group does not). This random allocation to

NUDGING WARFARIN MEDICATION ADHERENCE

One major health issue is that, too often, people do not adhere to prescribed medicine, even for serious medical conditions. One study used an RCT, employing a lottery technique, to encourage stroke patients to take warfarin (Volpp et al., 2008). The (nudge) treatment group had a 1% chance of winning \$100 but this was conditional upon taking their pills correctly. The control group did not receive any incentive – at least, not beyond the increased risk of dying by not taking their warfarin correctly. The result was a marked increase in medicine adherence in the experimental group – as assessed by an Informedix Med-eMonitor System with a daily reminder feature. This was a pilot study with only a small number of patients in each group. A second similar (but much larger) study failed to show a statistically significant difference between the treatment and control groups in warfarin patients, although there was evidence of a positive effect in a group of patients at higher risk *a priori* of poor adherence (Kimmel et al., 2012). The difference in results between these studies raises the general issue that all such experimental studies need to be replicated before they can be said to be robust and generalizable to the wider population, especially when small and perhaps non-representative samples of the target population have been used.

groups is very important in order to avoid systematic bias effects in allocation: if we observe differences in the behavior of the groups then these differences may be ascribed to the treatment and not because the members of the two groups were different from each other to begin with.

A typical RCT might involve sending different variations of a letter to nudge people to pay their taxes on time – above we saw an example with letters to unemployed people (see text box for a health-related RCT). The letter that achieves the highest level of compliance is then assumed to be the most effective in nudging people – this type of ‘market testing’ is widely used by commercial companies to hone their appeal to customers and to turn browsers into buyers (see Chapter 7).

Nudges have been applied in many areas of life and in most cases customers and citizens are unaware that they have been influenced. For example, office workers may not be aware that their companies are changing the default settings of their printers to double-sided printing. Here we see again how choice architecture and its clever use of defaults underpin many of the little decisions we make every day – and small everyday decisions can mount up to big changes (e.g., recycling of waste).

LIBERTY PRESERVING

According to Sunstein and Thaler, nudges are *liberty preserving*; that is, they steer people in a direction that does not take away their choices. This is a crucial part of their oxymoronically sounding phrase: *libertarian paternalism* – this reflects the notion that behavior can be manipulated and changed in a way that maintains freedom of choice (Thaler & Sunstein, 2003). According to this view, people are *at liberty* to make their own choices and, importantly, they are not restrained from doing so. However, this takes place in a context where a choice architect engineers the environment to influence decisions in ways that make consumers better off, *as judged by themselves*. According to Sunstein and Thaler (2003), illiberal paternalism is avoided by the fact that “people should be free to opt out of specified arrangements if they choose to do so” and this opt-out is said to “preserve freedom of choice”. The claim is made that the

choice architect is nudging people merely in the direction of choices that they would have made if they were fully rational.

Libertarian paternalism is similar to *asymmetric paternalism* (Camerer et al., 2003). This refers to policies designed to assist people who are behaving non-rationally and who by so doing are not maximizing their utility, while at the same time interfering only minimally with people who are behaving (neoclassically-speaking) rationally. Nudge policies are asymmetric in a related sense: they should be acceptable both to believers in human rationality and to those who believe that people often behave non-rationally.

In nudge theory, retaining the element of choice is all important: people can still choose to purchase the electrical appliance with the worst energy rating; maybe they care more about the color or price – or they have money to burn (some people seem to have a preference for contrariness too – it is *their* choice after all). Nudge theory declares that it does not take away this personal choice.

MINDSPACE

An attempt at summarizing non-coercive principles of behavior change was undertaken by the Institute for Government, along with the Cabinet Office, in the UK in 2009, which set as its goal to provide a simple check list for policy makers. The result was MINDSPACE which stands for nine principles that influence human behavior, described below. (We partly borrow the short explanation of each of the nine letters from the original MINDSPACE document (Dolan et al., 2010), and advise our readers to find the document online to see further examples.) For clarity of exposition, we illustrate these principles in relation to nudges to get motorists to slow down outside schools.

ELEMENTS OF MINDSPACE

M – Messenger: we are heavily influenced by who communicates information.

The messenger of information matters, for example their perceived authority. There are some data to show that people more favorably

receive information from experts (e.g., a doctor in a white coat). Similarities between the information giver and receiver are important – for example, the sign: “Kill your speed, not a child” is communicated better by a smiling child than a sour-faced government official. The feelings we have towards the messenger are also important – if we dislike them, then their advice is more likely to be discounted or even ignored.

I – Incentive: our responses to incentives are shaped by predictable mental shortcuts such as strongly avoiding losses.

Incentives are widely used by government, but their influence depends on such factors such as timing, type and magnitude. Incentives can be about money (i.e., the costs and benefits associated with different behaviors); but social aspects of incentives are also important. As discussed in Chapter 4, we need to consider a number of psychological factors. For example, our general propensity to loss aversion means we dislike losses more than we like gains of the same amount. Therefore, instead of saying that $\times$ number of children die or are injured by speeding cars, we could say that $\times$ children would be saved by a 5-miles per hour reduction in speed.

A health-related example relates to the finding that rewarding people for long-term weight reduction is less effective than if the problem is framed in the ‘domain of loss’ – a cost will be imposed if the goal is not achieved (e.g., a gift of money which can be kept if weight loss is maintained). Some countries do not add penalty points for speeding but take away points from a predetermined number – people have the sense they are losing something of value, rather than accumulating penalty points as something of a ‘boy racer’ badge of honor!

We also use reference points: the value of something depends on our frame of reference. As discussed in Chapter 4, we allocate money to mental bundles, so the incentive must be tied to whatever bundle is related to the behavior change in question. Also, we prefer to receive our incentives today, and not some point in the (uncertain) future (even when this future amount is larger). However, there is a downside to using incentives, even social ones: as an external source of motivation, they can crowd-out intrinsic motivation

CROWDING-OUT IN THE BEDROOM

Recall that one of the major assumptions of neoclassical economics is that more is better than less. George Loewenstein put this hypothesis to the test in the bedroom – perhaps appropriately as Loewenstein is related to Sigmund Freud. Along with colleagues, his 2015 study reported that when couples were required to double the amount of sex they usually had, this made them less happy, they wanted sex less often and did not enjoy it as much. Their otherwise intrinsic motivation, and utility/satisfaction, was crowded-out by the extrinsic (imposed) motivation - having sex to conform to the requirements of a scientific study must appear high up on the list of passion killers!

(doing something for its own sake – for an amusing example, see text box), and this can undermine long-term behavior change.

N – Norms: we are strongly influenced by what others do.

What people expect about social behavior influences how they behave. Social norms can be obvious (“No smoking here”) or more covert (social conventions when you meet someone for the first time). We tend to take our social norm cues from observing what other people are doing. Simply informing people about the existence of social norms can influence behavior (e.g., how many passengers in cars wear seat belts). Telling people that most guests in hotels recycle their unused towels encourages similar behavior. Telling drivers that other motorists slow down outside a school is effective, especially if it comes from a child.

Norms are spread through social networks and policy makers are wise to take these into account (e.g., typical community behavior). But, people need to be reminded about norms as they can quickly forget – in other words, norm-following behavior needs to be reinforced (see Chapter 5). But the use of social norms in nudging may backfire. If we learn that our neighbors are using more water than us then we may well *increase* our usage! Another example of backfiring norms was seen with signs at a national park in the

USA (Cialdini et al., 2006). One sign tried to deter people from taking home wood (it showed thieves stealing wood); the second sign showed a single thief. Both signs led to *more* wood being stolen, because the signs served to reinforce this harmful social norm, and they covertly conveyed the message: “take wood while stocks last!” There is a highly relevant social psychological literature on ‘social proofing’ which relates to the fact that we look to others for guidance on social behavior. This is likely how social norms work.

D – Defaults: we ‘go with the flow’ of pre-set options.

Much of our everyday behavior is just going with the flow – it is a form of taking the easy option, the path of least resistance. Defaults are pre-selected options which do not involve an active choice: we tend to take what is on offer (e.g., automatic enrolment in an organ donation program). Most people stick with the default, and rates of participation in organ donation programs are significantly higher than without it. In our road safety example, markings on the road which give the impression of speed could help encourage people to slow down outside schools.

S – Salience: our attention is drawn to what is novel and seems relevant to us.

Information to which we are attentive attracts cognitive processing. Although attention is not required for all forms of processing, it is often important for the effectiveness of certain types of messages. We are more likely to process information that is novel, accessible and simple. This could be in the form of funny messages – to deter littering on Bondi beach in Sydney, Australia, “Don’t be a tosser” was written on the bins (described in Tribe, 2016). In the school driving example, pictures drawn by children to convey the message to drivers to kill their speed and not children.

The concept of salience addresses a problem confronting the brain/mind: it is bombarded with stimuli and it must make a choice what to process – grabbing attention by salience is helpful in this respect. This concept accounts for why infrequent experiences get our attention more than familiar ones – indeed, there is a large literature devoted to *latent inhibition* and *learned irrelevance*, referring

to familiar stimuli losing their power to grab attention and, thus, processing. Saliency also refers to *peak* moments – a sharp pain at the dentist is remembered more vividly than a longer period of sustained discomfort: we especially remember what was salient to us, and forget the rest.

P – Priming: our acts are often influenced by sub-conscious cues.

Exposure to stimuli – sights, sounds and smells – can prime (i.e., make more likely) subsequent behavior (we have already discussed this in Chapter 5). These stimuli can be complex (e.g., words) or simple (freshly baked bread – see commercial examples in Chapter 7). Priming can happen outside of cognitive awareness and does not need elaborate processes for it to be effective. For example, regarding exposure to words, when people make a sentence out of scrambled, fitness-related words (e.g., ‘fit’ and ‘lean’) they are then immediately more likely to use the stairs instead of the lift (Wryobeck & Chen, 2003); happy faces lead people to drinking more (Winkielman, Berridge & Wilbarger, 2005); the smell of cleaning products in a canteen leads to more people clearing their tables (Holland, Hendriks & Aarts, 2005); and the list goes on and on (these examples are all taken from the MINDSPACE document (Dolan et al., 2010)). However, it should be noted that many priming studies are affected by the current replication crisis in social psychology (i.e., researchers often do not manage to find the same results as classic priming experiments; however, Kahneman who is a severe critic of these studies is in little doubt that the phenomenon exists). Streets surrounding schools could display pictures of children, and then as drivers approach the school, messages related to slowing down would be primed and, therefore, processed faster.

A – Affect: our emotional associations can powerfully shape our actions.

The experience of an emotion affects judgement and decision making, and these effects can be automatic and fast. For example, being in a good mood can lead to being overly optimistic, and being in a bad mood to being inappropriately pessimistic – both can impair

judgement and decision making. Even the mood-inducing effects of background music can do this, and it need not even be task-relevant – for example, seeing an attractive, smiling face on a loan advertisement leads to increased demand, similar in magnitude to the demand created by a 25% reduction in the loan's interest rate. (Bertrand et al., 2010). (This study was also described in the MINDSPACE document.) The influence of affect is much more prevalent than commonly thought, especially by neoclassical economists, and much of what we process is imbued with emotion.

But, affect needs to be used with caution. Images of happy children may make drivers more risk-taking and over-confident in their driving ability, so perhaps an image of a less-than-happy child may be needed at critical junctures on the road where speed is especially dangerous. This cannot really be known in advance, so experimental studies are needed to test such interventions (see RCTs, above).

C – Commitment: we seek to be consistent with our public promises, and reciprocate acts.

A lack of will power is a major reason why we do not always act in our own best self-interest. Commitment devices can be used to achieve long-term goals (see above). Such devices tend to become more effective as the costs for failure rise. A good example is smoking. Smokers were offered a savings account (Giné, Karlan, Zinman, 2010) in which they had to deposit money for 6 months, after which time they took a nicotine test. If they passed the test (i.e., they were nicotine-free) their money was returned, otherwise, they lost it (clearly, there is a loss aversion aspect here). After twelve months, this commitment device raised the chances of quitting smoking by 30 percent. Much the same is found with exercise. The mere act of signing a contract which specifies the amount of exercise leads to adherence, despite no monetary consequences of succeeding or failing – we like to remain consistent in our intentions and actions.

Getting drivers to agree to the statement that motorists should be especially careful around schools should help to lock them into this commitment mindset.

E – Ego: we act in ways that make us feel better about ourselves.

We, indeed, do have a desire to be consistent in our behavior, so if our behavior and beliefs are in conflict, our beliefs often change (this is accounted for by cognitive dissonance theory; see Chapter 5). In addition, we tend to attribute good outcomes to ourselves and bad outcomes to other people: we take praise with one hand and give out blame with the other. Attributions to our own behavior and others' is a central part of social psychology, and is used widely, especially in the commercial world. For example, males donate more to charity if they are approached by an attractive female, suggesting the giving of money reflects a desire to present a positive self-image. If we place an expectation on someone, this is often sufficient to encourage them to perform better – they have internalized these expectations (i.e., assimilated them with their self-image) and used them to guide their behavior. This can lead to a self-fulfilling prophecy – of course, this could be a vicious as well as a virtuous circle. We have a strong tendency to compare ourselves to other people: this is social comparison, which we engage in to be better able to evaluate ourselves. It can lead to biased judgements – for example, most people think they are above the average in terms of driving ability, which can lead to over-confidence and risk-proneness. Given that drivers do not want to think of themselves as potential children killers, they should feel a warm glow about being good citizens after committing to a statement that extra care is needed outside schools.

In order for the effects of nudge interventions to persist over the longer-term, it is important that people 'buy into' them. As discussed in Chapter 5, the process of *conversion* must be working because if only *compliance* is in operation the behavior will stop once active measures are not in place to maintain them.

THE CHOICE ARCHITECT: WHO CHOOSES?

It should be obvious that with choice architecture there must be an architect who decides upon the default option. But, how should they go about their business? One option would be to select the

rule that most people would select if they were well informed. As we have seen before, people are not fully informed and, therefore, do not always make optimal decisions. For instance, most people would select to make additional payments to their pension plans or to sign up for their company's pension plan if they fully appreciated what it is like to live with too little money in old age. This is an important issue. In 2010, 53% of workers in the US were at risk of not having adequate funds to maintain their lifestyle in retirement. A clever use of default options would eliminate some of the pain that people feel when they put away money for future consumption. There might even be the opportunity to use present bias to help their future, for example, a mobile app which prompts us to impulsive saving!

NUDGING: PROBLEMS AND PERILS

Nudge may seem uncontroversial; even, in common parlance, something of a 'no brainer'. But not everyone is in agreement with it. Some see paradoxes and ironies at its very foundation – indeed, those with an expressively uncharitable disposition may even view nudging as something of a *weasel* concept (meaning cunning and deceptive; see above). In particular, one major irony may be that, although nudging is quoted as an example of the validity of behavioral economics, it must rely upon a neoclassical bedrock of consistent and integrated preferences (see Chapter 3). In addition, some critics argue that it *downplays* the true importance of psychology, especially with regard to ideas about the nature of the *economic agent* and their preferences.

PREFERENCE PURIFICATION

Robert Sugden of the University of East Anglia is one of the UK's pioneers of behavioral economics. He highlights some of the conceptual problems with the whole nudge philosophy and approach – whether we think that nudging is a good thing for other (more practical) reasons is quite a different matter. Sugden highlights the

apparent ‘preference purification’ required to make Nudge work *in its own terms*, as well as assumptions about the ‘inner rational agent’ – Sugden discusses these matters in terms of “the conventional wisdom of behavioural welfare economics” (e.g., Infante, Lecouteux & Sugden, 2016) – as J. K. Galbraith put it in 1958: “the conventional wisdom accommodates itself not to the world that it is meant to interpret, but to the audience’s view of the world.”

As seen in Chapter 3, the essential idea of neoclassical economics is that individuals have integrated *latent preferences* which cannot be directly accessed – but we can infer them through *revealed preferences* in choice behavior. Now, we know that the economic agent’s psychology sometimes causes errors in decision making – previous chapters documented that revealed preferences are influenced by context, reference, even moods, and they are anything but pure! The task for economics is, therefore, to *recover* individual’s latent preferences by stripping away these psychological imperfections. Sugden’s argument is that Nudge must do this by *purifying* contaminated revealed preferences; and it is then the satisfaction of *these* purified preferences that nudge aims to maximize. These issues may seem a little arcane, but they have important implications for the justification and ethics of government behavioral interventions. Let us start to look at these issues in a little more detail.

Sunstein and Thaler are clear on the topic of behavioral interventions: “Libertarian paternalism is not an oxymoron”, they claim in 2003, before going on to assert that ‘paternalism’ is necessary because, as they put it, the anti-paternalist position is ‘incoherent’ and a ‘non-starter’. In their opinion, people are simply too swayed by irrelevant factors (e.g., by the position of food items in a cafeteria) and really cannot be left to their own flawed psychological devices to make the right decision from their own standpoint. Sunstein and Thaler say that the point of Nudge is to “make choosers better off, *as judged by themselves*”. Continuing this spirited defense, Thaler states in 2015:

... a point that critics of our book [i.e., *Nudge*] seem incapable of getting. [We] have no interest in telling people what to do. We want to help them achieve their *own* goals.

Pointing to the “*as judged by themselves*” clause in *Nudge*:

The italics are in the original but perhaps we should also have used bold and a large font, given the number of times we have been accused of thinking that we know what is best for everyone. . . . We just want to reduce what people would themselves call errors.

The problem with this position is that when choices are context-dependent, how are we to understand individual judgements? And how is the planner (e.g., the cafeteria choice architect) to reconstruct them? The nearest Thaler and Sunstein get to answering these questions is in discussing decision making errors:

In many cases, individuals make pretty bad decisions – decisions that they would not have made if they had paid full attention and possessed complete information, unlimited cognitive abilities, and complete self-control.

(Thaler and Sunstein, 2008)

Now, we are getting somewhere. It seems clear that Sunstein and Thaler categorize such decisions as “inferior decisions in terms of their [i.e., the individuals’] own welfare”. The implication is that Sunstein and Thaler’s welfare criterion is the satisfaction of the *latent preferences* that would equal individuals’ *revealed preferences* if it were not for these imperfections. This is *preference purification*: the reconstruction of what the individual would have chosen in the *absence* of reasoning imperfections. It follows that the implicit assumption is that *latent preferences* are context-independent – this seems to be the case because Sunstein and Thaler are claiming to solve a problem created by the context-dependence of revealed preferences.

Sunstein and Thaler’s rhetorical strategy is to characterize conventional economists as assuming that humans are ECONS who are immune to reasoning imperfections and can “think like Albert Einstein, store as much memory as IBM’s Big Blue, and exercise the willpower of Mahatma Gandhi.” Uncontroversially, Sunstein and Thaler say, “the folks we know are not like that” – many of whom are exalted intellectuals with no dearth of reasoning power.

Sugden's criticism is that, according to Nudge, the economic agent is a faulty ECON – but an ECON *all the same!* This imperfect ECON needs a little help to reveal its true (latent) preferences. So, inside the economic agent is a neoclassically rational ECON with coherent preferences that are struggling to escape the binds of psychological restraints to achieve *true* utility maximization.

Sugden contends that the problem with Sunstein and Thaler's approach is that they do not take psychology seriously enough. Of course, they assume that judgements, decisions and choice behaviors are psychologically flawed, but they seem not to go further in saying that all preferences of the economic agent are psychologically flawed – as defined by neoclassical economics. This is a fundamental point: Nudge seems to rely upon the notion of an economic agent who is, at their core, rational (ECON); it is just that they struggle to reveal these consistently integrated preferences in actual life. So, Sunstein and Thaler seem to have a flawed argument in that they must rely upon the unjustified notion of the neoclassically rational economic agent.

SUPERREASONER: OBJECTIVE REASONING AND SUBJECTIVE PREFERENCES

Well, what might be going on? Let us look at the issue more closely. Imagine an economic agent called SuperReasoner, who: has access to all relevant information; gives full attention to this information; has no cognitive limitations; and has perfect self-control? (After all, these are Sunstein and Thaler's criteria. You will also encounter SuperReasoner in Infante, Lecouteux & Sugden, 2016.) Let us also assume that SuperReasoner's revealed preferences are not blown around on the psychological winds of reference points, context, mood, and the like? As we can see, SuperReasoner has some fine neoclassical economic features.

Now, contrast SuperReasoner with an everyday HUMAN, Jo/anne who are in Sunstein and Thaler's cafeteria and choose whichever of fresh fruit or cream cake is displayed nearest to the front of the counter: they have been nudged. Now imagine SuperReasoner enters the cafeteria. Would s/he be unbiased and not in need of nudging to make the 'right' (as defined by the cafeteria

architect) choice to eat healthy food? Well, what should we expect of SuperReasoner in this situation? Sugden claims that, given a truly free choice, there is no reason to think that SuperReasoner would pick the fruit over the cake – why should they? Their processing abilities may be *objective*, but their preferences are *subjective*. Importantly, in their preferences at that moment, they would be just as swayed as the psychologically flawed Jo/anne. Although there are enormous differences between SuperReasoner and Jo/anne in cognitive abilities, will power, and such like, this does not allow us to say anything about their personal (subjective) preferences: there just seems to be no determinate answer, accessible by applying unlimited cognitive ability to full information ($2 + 2 = 4$, but there is nothing in economics that says fruit = good, cake = bad).

You may well ask, so what? Why do we need to be concerned with SuperReasoner's choice behaviors? Well, the whole point of Nudge is that such a SuperReasoner should not need a nudge to make the right decision, because they have all the information they need, and can use it appropriately, to come to the 'right' decision regarding the choice of fruit or cake. But we can have no confidence that SuperReasoner's personal (subjective) behavior will conform to what the choice architect thinks is 'correct'. Therefore, it seems that basic psychology is involved in all such choice decisions, even SuperReasoner's. To put things another way, Nudge may not, as claimed, make "choosers better off, *as judged by themselves*". They may be better off as judged by the choice architect, and the architect may well be right, but this is *not* the underlying rationale of nudging!

It could be decided that for purely practical reasons, nudge is a very fine thing and should be at the heart of government policy making. However, this decision would place much more emphasis on 'paternal' and much less on 'liberty'. If the conceptual moral rug has been pulled from under the nudge approach, we may demand greater justification for nudge interventions than is commonly the case. For a start, there would need to be greater challenge of the notion that nudge makes choosers are better off, *as judged by others*. We might agree that government could simply tell us to stop acting stupidly – we should eat healthier food, not drink/smoke,

save for our retirement, and so on – but this would not be *liberal paternalism* and nudging (it would be something closer to ‘nanny state’ paternalism).

There are other problems with the nudge approach. For one, does it not impede – indeed, it may serve to erode – people’s autonomy of decision making? Concerns, too, have been expressed about the democratic legitimacy of nudging people without their knowledge. It may be thought that if they are properly informed then this potential problem is mitigated. However, if we accept Daniel Kahneman’s view that the power of System 1 thinking (heuristics, biases, etc.) is much stronger than System 2 (reflective processes), this may well not be the case.

It is important to recognize that as with all initially benign initiatives, there is the ever-present concern that a friendly nudge may segue into a less friendly budge, and finally into a definitely unfriendly shove – and all underwritten by the belief that it is in the best interests of citizens, intellectually bolstered by: *as judged by themselves*. Nevertheless, as a society we may well want to allow government to act as a Dutch Uncle, offering words of advice, especially in circumstances where behavior is resulting in ‘externalities’ (i.e., a negative impact on other people; e.g., the health costs associated with smoking and an unhealthy life style). This might be a paternalistic price well worth paying for a healthier and wealthier society. Whatever decision we make, the philosophical basis of nudge seems unable to provide the justification.

Taking a more sinister turn, the use of psychological ploys to influence people’s behavior may be used for malign purposes – arguably, in the commercial (and political) sphere, it sometimes is (see Chapter 7). History provides sufficient lessons. Nazi Germany used social psychological processes to further its ends, including social comparison, social norms, cognitive-impaired emotional reactions and the like. Although there is no evidence to indicate Western democracies are using behavioral science in such a negative manner, it would surely take a heroic feat of optimism to believe that this will *never* happen. We may as well start thinking seriously about these possible outcomes in order to build defenses against them.

BENIGN PATERNALISM

We have reached a point where we can see that the concept of liberal paternalism is problematic: there is no reason to think that people's true preferences necessarily serve their long-term welfare – short-term utility satisfaction, blown around on the winds of psychological whim, seem to be the order of the day. Where does this leave us?

One option is to pursue some form of, what we might choose to call, *benign paternalism*, which we may define as nudging people in the direction of what is good for them. This truly psychological approach – stripped of the need to purify preferences, as defined above – would be aimed at nudging people toward a longer, healthier and wealthier life – anyone for a short, unhealthy and poor life? This benign paternalism retains the liberal component of Sunstein and Thaler's approach as people can choose to reject the nudge, and other options are on the table – although they would be framed as less desirable. This benign paternalism approach has another merit: it avoids the weasel aspects that some people think must underpin Sunstein and Thaler's approach. In addition, the very name – *benign paternalism* – has a sufficient tone of patronization to serve as a constant reminder that society through government has to come to a consensus as to 'what is right' – and it may not be 'right' from the individual's short-term (subjective) perspective although it enhances their longer-term (objective) utility. Government may also want to combine this approach with standard economic practices to impose a fine on the behaviors that cause externalities and, thus, costs to other people. But beyond encouraging people to be healthy, happy, and wealthy, what should be the other targets?

SOCIAL COMPARISON AND SUBJECTIVE WELL-BEING

As we have seen above, paternalism comes in distinct forms which differ primarily in their understanding of preferences and the goals of nudging: should people be nudged towards the behavior they would choose if they were ECON, or should they be nudged towards

the behavior that a benign choice architect considers to be best for them? In other words: what should be the criteria for nudge?

Instead of trying to identify underlying preferences, we may ask: what is actually important for people's well-being? To answer this question, we need to consider the ultimate goal of benevolent governments, which is beautifully illustrated in a quote by Thomas Jefferson (1809):

The care of human life and happiness and not their destruction is the first and only legitimate object of good government.

(Reprinted in Looney, 2005)

The idea that the central role of governments is the well-being of its citizens is also reflected in the United States Declaration of Independence, drafted by Jefferson and adopted in 1776, which famously declares the right to "Life, Liberty and the pursuit of *Happiness*". How should this happiness be measured? One option is to ask people how happy they are and thus consider their own, *subjective* evaluation of their happiness instead of observing their revealed preferences – this is captured in measures of subjective well-being (SWB). SWB might be a convenient catch-all measure of happiness (or utility, as economists prefer to call it). All of this is in the spirit of one version of behavioral economics which argues that people are well off to the extent that they are happy or satisfied and one should, therefore, simply ask them about their well-being.

If we were to go down the SWB path as the criterion of happiness/utility/welfare, then we have to consider psychological processes that can influence these subjective evaluations of happiness, among them: *social comparison* (e.g., Festinger 1954).

As we know, choices are often dependent on available options (so-called, 'reference dependence'; discussed in Chapter 4). One good example of reference dependence is social comparison, which we already briefly mentioned in Chapter 5. Here, the reference point – or frame of reference – is a peer group, which consists of relevant others (maybe one's colleagues, friends or family members). A major emerging finding in the subjective well-being literature is that people often care more about their *relative* utility; that is, their

comparative standing in society, rather than their *absolute* utility, especially with respect to income and other material goods (e.g., Easterlin, 2003). This directly contradicts the mainstream economist's understanding of utility maximization, which depends solely on the individual's own consumption and not that of other people, regardless of their relationship (what has my pleasure from eating an apple got to do with yours?). However, people do compare themselves in everyday life – and, as we saw in Chapter 5, even monkeys engage in work-related social comparison and can get into a 'strop' if they feel they are not getting their fair share of pay.

One example in humans that seems to bear out this social comparison effect is found in unemployment. Those who are unemployed, but live in regions of low unemployment, are considerably less satisfied than unemployed people who live in regions of high unemployment – it is possible though that unemployed people in high employment areas have other problems (e.g., health) and this prevents them from working and, at the same time, making them less happy. (This is an example of how we need to be careful to infer *causation* from mere *correlation*, however clever-looking the study.) What seems to matter here is not just the loss of income that unemployment brings, but the loss of social status which is damaged less if others are in the same socioeconomic boat.

One major reason for thinking that social comparison is important comes from the work of economist Richard Easterlin, who in 1974 identified a paradox in the relationship between happiness and income: cross-sectional studies (data collected at any one time) show richer countries to be happier than poorer countries; but, when assessed over time, happiness does not increase as a country gets richer. One major interpretation is that how happy we feel has much to do with our perceived *relative standing* in society, which does not change as everyone in a country gets richer.

Social comparison – comparing ourselves to others – typically occurs in life domains where judgments of relative standing are easy to make. We notice when a colleague buys an expensive watch or a friend posts pictures of their new house on Facebook. We may then adopt their example as a new standard (reference point) for ourselves to which we then start to aspire. As an example, a major

finding in the social comparison literature is that *relative* income (i.e., how one's income compares to relevant others, e.g., peers) is more important for subjective well-being than the absolute amount – we discussed this in Chapter 5. From a neoclassical economic point of view, this is plain silly: *assuming* equal buying power, who should prefer an annual income of £50,000 to £100,000? (It should not matter what other people are earning; in these two examples, £25,000 or £200,000, respectively.) This effect plays out within local networks too. As the writer H. L. Mencken once quipped, “A wealthy man is one who earns \$100 a year more than his wife's sister's husband” (quoted in Norton, 2012).

There are other studies that seem to attest to the importance of social comparison effects on subjective well-being. One set of studies relates to *affective forecasting* (e.g., Wilson & Gilbert, 2005). To illustrate, consider the following study, which asked respondents across a number of countries to rate their present well-being, their well-being from 5 years ago, and to guess how happy they expected to be 5 years from now. On average, people rated past well-being lower than present well-being and anticipated to be more satisfied in 5 years' time. However, their well-being actually remained fairly constant over time (Easterlin, 2001). Why did these respondents assume fairly large swings in their well-being over time, which actually did not occur? One possibility is that they cannot forecast the effects of social comparison, as well as changes in aspirations and hedonic adaptation (the tendency to return to previous levels of SWB after life events). If we continue to compare ourselves with others, it is very hard to get ahead, *relatively speaking*.

MONEY, AFTER ALL, MAY NOT BUY HAPPINESS

Life is not all about money, and nor is subjective well-being. More happily for the financially (relatively) disadvantaged, many of the things that impact subjective well-being are less easy to quantify in monetary terms and, therefore, compare. For this reason, social comparison effects are less prevalent in life domains in which achievements are difficult to observe, including health and partnerships – where would you even start to compare the quality of your

romantic relationship(s) with those of your friends? In these days of social media, we may know whether our friend has a new partner – and we may even know how attractive, successful, kind and so on, they are – but it is much more difficult to assess from this information whether they are happy (or even as happy as they say they are!).

An important point here is that government can nudge people in ways to enhance these financially intangible features of life where social comparison is less possible (e.g., social relationship, health, leisure). By this route, instead of envying we may well pity the fabulously wealthy individual who does not have the time to enjoy the ‘simpler things in life’ – or, at least, we can console ourselves in this belief and, thereby, make ourselves happier!

CONCLUSIONS

In this chapter, we have seen that nudges, which are part of the toolkit of the behavioral policy maker, are often more effective than simply providing information, using incentives, or imposing regulation to change behavior. For example, social incentives and pre-commitments can help to make people adhere to their goals and not to give-in to temptations of immediate gratification. MINDSPACE is a helpful mnemonic to help policy makers design more effective policies based on behavioral insights, but we have also seen some of the conceptual problems with this approach. Despite these caveats, behavioral insights teams around the world now help governments design and evaluate behavioral policies. As the World Bank and the United Nations stress, as well as money in the bank, satisfaction, a sense of purpose and flourishing are vital components of the true wealth and health of the nation.

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BEHAVIORAL SCIENCE OF THE COMMERCIAL (AND POLITICAL) WORLD OF PERSUASION

The previous chapter showed how behavioral economics is used by governments to nudge people to make better decisions to improve their health and wealth (e.g., pension savings). The aim is to enhance the overall welfare of society and, as a pleasing outcome, reduce public expenditure (e.g., on the treatment of preventable disease). Many of the same behavioral economic principles are employed by commercial enterprises to sell products and services – and increasingly, often with attendant controversy, in political campaigns to sell ideas and policies. In fact, for many years there has been a large and lucrative industry devoted to exploiting psychological insights for commercial advantage. These are the ‘hidden persuaders’ that Vance Packard described in his 1957 book of the same name and, more recently, depicted in the highly acclaimed television series of 1960/70s advertising, *Mad Men*.

However, unlike much of this earlier *motivational research* – the name by which much of psychology was known in the advertising industry, which was influenced by Freudian ideas of deep and hidden motives to do with sex and death – modern-day consumer research is more concerned with the ‘observable shallows’ that, although in full sight, we often fail to recognize. This is an intriguing

way to look at the psychological basis of human consumer behavior; in particular, it highlights the fact that often it is the small things that really matter.

The purpose of this chapter is to survey commercial practices and ploys and, by so doing, reveal a different perspective on the true nature of the everyday economic mind.

HIDDEN PERSUASION

The success of marketing, advertising, sales and brand management depends on a good understanding of the motivation of the consumer – companies rarely just sell a product or service, rather they sell the ideas and feelings that surround them. In mid-century American advertising there existed two major perspectives. One was based on identifying a Unique Selling Proposition (USP), conveying factual information and building a strong brand reinforced by high volume media exposure – this was epitomized by David Ogilvy of Ogilvy & Mather (see Ogilvy, 1963, 1983). The other perspective came from the standpoint of the psychoanalytically “depth boys” (there were notable “girls” too, e.g., Anna Freud) who sought to exploit the deeper and (often) darker unconscious forces of the mind. In the first episode of *Man Men*, this difference of perspective was dramatized by the main protagonist Don Draper throwing into the waste bin a report that suggested that best to advertise cigarettes is to tell consumers that they will kill them (playing on the Freudian notion of Thanatos, ‘death instinct’) – as the makers of Lucky Strike opined: “So we tell them that since you're going to die smoking anyway, you should die with us? That's crazy!”

Long before the advent and formalization of behavioral economics, the commercial world was at the forefront of challenging the notion of *homo economicus* who needs no persuasion to know what s/he wants (preferences) and how to get these in a fully rational manner. Indeed, it is very evident that the commercial world has given such neoclassical economic notions scant regard, preferring instead to believe that the consumer's wants can be shaped and influenced. Over many decades, this commercial world has become especially adept at devising psychological ploys to separate

EVALUATIVE CONDITIONING

A remarkably powerful and ubiquitous phenomenon in all areas of life is *evaluative conditioning*: this refers to a change in attitude towards some stimulus (it could be a product, service or even a political idea). It can readily be brought to bear on advertising and marketing. Evaluative conditioning reflects a change in the valence, positive vs negative, of a stimulus as a result of the pairing of that stimulus with another, positive or negative, stimulus, respectively. It is a form of classical (or Pavlovian) conditioning in which an initially neutral stimulus (e.g., light – technically known as the ‘conditioned stimulus’, CS) comes to take on the reinforcing properties of an innately rewarding (or punishing) stimulus (e.g., for Fido the dog, a piece of meat or electric shock; technically known as the ‘unconditioned stimulus’, UCS). After a sufficient number of CS–UCS pairings, the CS acquires the power to elicit a response (the ‘conditioned response’) which is similar to the response to the innate UCS (i.e., the ‘unconditioned response’). By this procedure, in some form or another, evaluative conditioning can be employed to transfer emotional value to commercial products and services, where previously none existed.

the consumer from their hard-gotten money – as Rory Sutherland of OgilvyChange jokingly puts it: “savings are only delayed expenditure”. The job of the marketing (wo)man is to speed up this process.

It is a wonder to behold: the commercial world is full of various types of creative agencies who are tasked with nothing more than finding better ways to portray even the most humdrum products and services as necessities. It is not uncommon for senior executives to fly around the globe to gather together to discuss how best to sell their brand of toilet roll or toothpaste – essentially, what they are trying to do is to frame their products and services in a way that best differentiates them from their rivals who, of course, are doing much the same thing. From subtle messages to more explicit associations of innately pleasant stimuli with products and services – so called evaluative conditioning (see text box) – commercial companies seek to influence the consumer in a myriad of ways.

THE BUTTERFLY EFFECT

Small things can have big effects, and need not cost the earth. Ogilvy Change (www.ogilvychange.com), is an innovative advertising agency that fully embraces behavioral economics (led by advertising guru Rory Sutherland, whom we already met above), describes on its website how they look for ‘butterfly effects’ (see text box) in consumer behavior – the goal here is to find small (and often inexpensive) nudges that will have disproportionate effects on people’s behavior (Sutherland, 2014).

BUTTERFLY EFFECT

The idea of a butterfly flapping its wings in Brazil and causing a storm in Australia is based on chaos theory, which states that small initial state changes can have large effects. It was originally associated with weather systems but then got extended to other areas of science, including behavioral science. The basic idea is that the outcomes in nonlinear (complex) systems are sensitive to initial conditions, which, although small in magnitude, can exert big effects. Thus, a small contextual change – a small nudge – may significantly affect people’s decisions and longer-term downstream outcomes.

COMMERCIAL PREFERENCES

As an ‘adman’ like the insightful and flamboyant – and irrepressible – Rory Sutherland of OgilvyChange makes clear, if the consumer made perfect choices based on perfect information, under conditions of perfect trust, and possessed unlimited cognitive processing and will power, then the advertising and marketing world would be populated by very poor people – it is not! (Rory’s talks are available on the internet, and his creative thoughts are contained in his 2011 book, *The Wiki Man*. It is also worth reading a 1963 book by the influential advertiser, David Ogilvy, who established the company for which Rory works: *Confessions of an Advertising Man*; see also Ogilvy, 1983.) If, indeed, the typical consumer conforms to the neoclassical notion of *homo economicus*, then no one told this highly

lucrative industry which must have been going about their business under a terrible misapprehension – from the quality of their clothes and cost of their cars, this does not appear to be the case.

Typically, the consumer *is* vulnerable to the practices and ploys of *Mad Men*. To illustrate this fact, in 2013, on behalf of the Institute of Practitioners in Advertising (IPA), two influential figures in the advertising industry, Les Binet and Peter Field, conducted an analysis of the most successful UK ad campaigns of the past 30 years. They found that “the most effective advertisements of all are those with little or no rational content” – we see below that this conclusion flies in the face of one information-based theory of persuasive communication. These authors also noted that television remains the preferred emotional medium – even the smartest static advertisement is unlikely to make anyone grin, gasp or weep. And, it does not matter if we pay much attention to advertisements on television: not only are they now targeted to the very *specific* demographic of *specific* programs on the many available *specific* TV channels – targeting is now very precise – they are designed to seep through to our nonconscious (System 1) mind even though they are merely played in the background. Indeed, this route may make them *more* effective because it by-passes the editing features of the more cognitive and critical (System 2) mind. And whereas before, during an ‘ad break’ we may have left the room to make a cup of tea, now we are more likely to be engaged with social media and television advertisements play on this fact – no doubt, in the not-too-distant future, the TV advert being shown will be synchronized with what we are at that moment experiencing on a social media platform (it is for such reasons that companies want us to sign-in via a single entry point, e.g., Facebook, because, then, they can retrieve a mass of information held on people). So advertisers need only grab some of our attention for their influence to be felt, and more often than not this is in purely emotional terms. In all of this, something else is of importance: *mere exposure*. It is probably responsible for sustaining the advertising industry even when creative juices have run rather dry.

Work by Robert Zajonc starting in the 1960s demonstrated that people have a tendency to develop a preference for stimuli *merely* by virtue of becoming familiar with them – this is the ‘familiarity

principle' (e.g., Zajonc, 1968). The mere exposure effect is robust and can be elicited by such stimuli as abstract geometric figures, paintings, faces and sounds. In broader psychological terms, it may explain why we like being around familiar people – this effect is called 'glow of warmth', and it is likely to have an evolutionary origin: whereas novel stimuli initially lead to a fear-avoidance reaction, this declines with repeated exposure when we come to learn that the stimulus is harmless and may well be useful. Advertising works to some extent by this very process – this is why exposure to ads needs to be repeated. A single presentation of a high information advert – even assuming it could be fully processed – is unlikely ever to be effective.

Another major advertising ploy relies upon the fact that we seek information and reassurance from other people – called *social proof*. There is even evidence that our facial muscles mimic automatically the facial expressions of other people (e.g., Prochazkova & Kret, 2017) – and the configuration of our facial muscles then sends information to the brain which infers what emotional state we ought to be in (if you want a quick 'pick me up', just place a pencil between your lips to create a muscle smile!). Little of this knowledge, often built-up via industry folklore, has evaded the sharp advertising executive. We see their actions when, for example, we may go to the cinema with the express intention not to eat the super-sized popcorn or drink the super-large drink, but once we see people doing this on the big screen we often have a rapid change of heart and, then, mind – especially if we are in a group where other people are eating and drinking (who wants to be left out?). Before long we are stuffed full of popcorn, hotdogs and fizzy drinks, and left to wonder "how did *that* happen?" It was not by accident; it was by design.

All of this is interesting, but it is also of academic interest because it reveals important facts about everyday economic life: how people make real decisions in real life. In this way, the commercial world may be seen as a powerful laboratory for the testing of behavioral economic ideas. The financial incentives to understand consumer motivation are huge. Whereas an academic behavioral economist can be wrong for many years without too much pecuniary punishment – indeed, during this time, s/he may well be promoted –

a commercial company would soon find itself going out of business if it misunderstands the mind of the consumer. This is an underappreciated fact and has been neglected in academic circles – motivated, in part, by the notion of commerce as a grubby profession and a little beneath the self-proclaimed exalted status of the tenured academic. The *science* of behavioral economics would be enhanced by greater knowledge of *commercial* practices and ploys – what really works in the laboratory of everyday economic life?

PERSONALITY AND INTERNET SHOPPING

Imagine a world where internet shopping companies know your gender, age, religious/political leanings and personality, without even asking you directly. Well, they do already! At least, they can have a good guess based on the time of day/week we use the internet, and the considerable amount of personal information stored in our social media profiles (e.g., Facebook ‘likes’).

As an example of the way the industry is moving, consider one London based company, VisualDNA (www.visualdna.com). They have tested 100,000s of people on a personality test, and then matched these personality data to how the same people navigate websites. They sell this information to companies who use it to predict the personality characteristics of browsers. But, why would companies want to know the personalities of their potential customers? Well, to some extent, personality predicts preferences. For example, highly extraverted people may want more of a social experience; emotionally reactive people may need some proverbial ‘hand-holding’; whereas those low on agreeableness (i.e., tough-minded) may want to get in and out as quickly as possible. The upshot of this novel approach is that some companies are now using this behavioral technology to ‘optimize’ the shopping experience for specific personality types. This is why some websites seem in tune with our personality while others grate on us. Depending on one’s viewpoint, this is either a very clever use of behavioral science or rather sneaky – whichever, the intention is to turn browsers into buyers, and ‘knowing your customer’ is a great help to get them to click the ‘Buy’ button.

PSYCHOLOGICAL VALUE

Economics has always been concerned with ‘value’ and ‘utility’ of various kinds, and especially the optimization of the allocation of scarce resources to maximize them. But, how may we define value and utility in behavioral economic terms? We can start by distinguishing between objective (‘real’ tangible) value and subjective (‘artificial’ psychological) value – the latter, created by the advertising world, has always been seen as distinctly second rate. However, this distinction may not always be as sharp as we might assume. We can easily think of the objective value of a car, and the ‘badge’ value of it: just think of Jaguar and Skoda – yet sometimes what is under the bonnet is little different between low and high-end brands (e.g., Skoda is owned by Volkswagen and enjoys its technical strengths – for this reason, Skoda often appears at the top of car league tables). Yet, on the basis purely of ‘badge’ value, and the usual caveat of all else being equal, who *really* wants to own Skoda over a Jaguar? (Although, it is true, contrarians might derive some idiosyncratic utility by violating this general rule.)

Once we have our car, we see psychological value in the ridiculous experience most drivers have felt: a newly valeted car seems to drive better! Belief is important too: for example, branded analgesics work better than generics (e.g., Hallam, 2015), and not only in psychological but also physical terms! And fish and chips taste better when sitting on a harbor wall looking out to sea. None of this is a magician’s trick: *psychological* value is at the heart of what we perceive as ‘value’, of all kinds – there are many other instances of how perceived value is affected by what should be, in Richard Thaler’s words, supposedly irrelevant factors (e.g., transaction value – see below).

Tangible value is important of course: faster trains are superior to slower ones, and cars that do not break down are always preferred to those that do. However, if the cost of faster trains is £16–22 billion (which is the case of High Speed 2 at 2017 estimates), and this saves 20% travel time but the psychological cost is fewer tables on which to work, then is this a sensible expenditure of money? For *many* billions less, technologically advanced trains could be built

which are slower but which afford more opportunity for desk work: it is a matter of (re)framing. This is especially true when many problems are not problems of technology, but essentially of perception. The intriguing conclusion is that big solutions do not always need big investment; far better, clever and often much cheaper solutions do the trick. This is one of the real potential benefits of behavioral economics. But, as with the case of the reliability of cars, a minimum standard of objective value must be obtained before psychological value can be added to make things even better. The idea is that most of the things we consume are infused with psychological value. Knowing this means that we could exploit untapped potential to enhance the utility of the individual as well as increasing the general welfare of society. Whatever the potential benefits of behavioral economics for the future, in the present world such knowledge can be used to save a lot of money (as cash-strapped central government have recognized).

In our individual everyday life, we can all put these principles to good use. For example, we could apply consumer research published in the *Journal of Wine Economics* which confirms that if we are told a wine is expensive it tastes better (Goldstein et al., 2008) – this is psychological value, pure and simple. (Beyond a minimum threshold of acceptability, only a small percentage of true wine connoisseurs have much of a clue what is a good and less good wine.) In addition, the lighting and music affect how we perceive the *same* wine, as indeed it can affect our experience of chocolate – soft notes (e.g., Adele’s ‘Hello’) make dark chocolate taste creamier, whereas sharp violin notes make the *same* chocolate sharper and bitter (Reinoso Carvalho et al., 2017). And perhaps not surprisingly, the mood we happen to be in affects how we experience food. We could all choice architect our own lives to enhance psychological value. Also, we could use this knowledge to avoid falling – or should that be, *fooling!* – into behavioral economic pits.

One example of these pitfalls is seen with the perceived value that is writ large in a class of goods that owe their name to Thorstein Veblen, whom we have already encountered in Chapter 2: Veblen goods (see text box).

VEBLÉN GOODS

In Chapter 2, we saw the criticism of neoclassical economics by Thorstein Veblen and his argument that ‘conspicuous consumption’ – think of sipping champagne on a luxury yacht – serves an important social purpose and, indeed, violates standard economic principles. A *Veblen good* is one for which demand increases as price increases. This is in opposition to the usual price and demand graphs of most products and services. Such *luxury brands* serve as status symbols and as a sign that resources can be spent on luxuries which have mostly psychological and social value – think of a Gucci handbag for £2,000 over a high street shop one for £40. It is in the very nature of a Veblen good that it is out of the price league of the *hoi polloi*. If nothing else does, Veblen goods attest to the fundamental psychological nature of *value* – and, perhaps also, to the shallowness of many people’s preferences.

The thing we should bear in mind is that there is a subtle interplay between tangible (objective) value and psychological (subjective) value – of course, those who can afford it would not buy a top of the range Jaguar XJ if it did not have superb technological features (this is a *necessary* condition), but the psychological value comes from the brand (*sufficient* condition) which comprises total experienced *value*: not only does it *drive* like a dream but it *feels* like one too!

However, we must not run away with the unlimited potential of psychological value. Framing is important but it will never be an adequate substitute for tangible value. Basic needs must be met before psychological ones have much of a chance to add value. For example, a cold room or unreliable car is an objective fact, and no amount of reframing would create much of psychological value. But when the product/service is within the *zone of tolerance*, there is scope for the manufacture of such intangible value.

On a wider societal level, the creation of psychological value can lead to social leveling. As Andy Warhol observed in his 1975 book, *The Philosophy of Andy Warhol*,

A Coke is a Coke and no amount of money can get you a better Coke than the one the bum on the corner is drinking. All the Cokes are the same and all the Cokes are good. Liz Taylor knows it, the President knows it, the bum knows it, and you know it.

Part of the American Dream is to enable all citizens to eat the same McDonald's burger washed down with the same Coke as the next person, be they pauper or prince. As this example shows, psychological value can be created even when objective (tangible) value is not exceptionally high, but it does need to be consistent and reliable (we know what to expect) and this is one major advantage of trusted brands (see below).

CLOCKS AND CLOUDS

The above discussion raises many issues of importance to both the individual and society. Now, to put things into proper theoretical perspective, it might be useful to think of the neoclassical economic approach to such matters as being a mechanistic one: it assumes big problems (e.g., transporting people around the country) need big (and expensive) solutions. What is not typically considered is psychological value, and psychological opportunity costs (e.g., being on a faster train but in a less psychologically maximizing environment). As in the case of the freshly washed car that just seems to drive better, there is leakage between objective and subjective value, and often the latter can provide a solution to the former, and almost always at a much lower cost – something that is of interest to the cost–benefit economist. As Rory Sutherland is fond of reminding us, this reflects the distinction between clocks and clouds, which is a distinction made by the world-famous philosopher Karl Popper: clocks are mechanical, easily understood and can be modeled; whereas, in stark contrast, clouds are altogether more mercurial and ill-defined, not lending themselves to mechanical solution (Popper, 1966). So much of human judgement, decision making and behavior seems to reflect clouds, not clocks, and requires a psychological solution. Some examples will suffice to make this point clear.

PSYCHOLOGICAL VALUE IN ECONOMICS

Mainstream neoclassically-inspired economics has had little time for such things as psychological value. Yet, the notion of economic value moved away from quantifying value with a metric (e.g., number of man hours needed to make a good) to a subjective notion which meant that the whole issue could be sidestepped by the assumption that value is what people assume it to be, and it is contained in the preferences they *reveal*.

However, it is interesting to learn that the commercial notion of value as a central psychological construct is more in keeping with an older school of economics, associated with Ludwig von Mises (1881–1973) – an Austrian-American economist – who believed that the field of *praxeology* which is the study of human action (what we would now call psychology) is the general field and economics is only a sub-discipline (he defined economics as the practice of praxeology/psychology under conditions of scarcity, a rather pleasing definition of behavioral economics). This approach certainly is endorsed by the commercial world where *form over function* is all important – as already emphasized, function (e.g., a technically sufficient car) is a necessary condition, but the psychological *form* the sufficient one.

The major take-home point of the above discussion is that the commercial use of behavioral economics has been adding psychological value to products and services and, *par excellence*, shows that in human welfare, such psychological value is important and should not be neglected in cost-benefit analyses – especially not now that subjective well-being is at the heart of the governmental social welfare agenda (see Chapter 6). What is especially valuable about the commercial use of behavioral economics is that now we have the psychological technology to make people wealthier not by providing *more* choices (which can be just downright confusing – entailing the potential of disutility resulting from decision cost) but encouraging and enabling them to make *better* choices. This may allow us to jump off the hedonic treadmill and avoid the pernicious effects of social comparison (see Chapter 6), while at the same time enjoying the fruits of technological and commercial innovations: to be wealthier, healthier and happier.

We have already seen in previous chapters various methods that can be used to influence choices and nudge people's behavior in the desired direction. Advertisers and marketers employ these and other techniques to convince the consumer of the superiority of the goods they advertise. To achieve this end, commercial persuasion is successful to the degree it understands how people *actually* process information.

TECHNIQUES OF PERSUASION

Developments in the scientific understanding of persuasion have led to a significant shift as how best to communicate messages to influence the consumer, as well as citizens more widely (e.g., government 'information campaigns'). To understand this field, it is necessary to know the difference between the 'information processing model' and the 'cognitive response model'.

Before the 1980s, most theories of persuasion stressed *systematic processing*, which assumed that changes in attitude depend on how the recipient of the message processes it – active and systematic processing of arguments being the important thing (e.g., Chaiken, 1980). The idea is that when attitudes, beliefs and the like are changed, behavior invariably follows. This was all very logical and sensible sounding, but not very effective. Few studies supported this rational model: message reception (as measured by recall) tends not to correlate with attitude change and behavior.

Around about the late 1960s, an alternative, 'cognitive response model', was developed (Greenwald, 1968). This states that what is important about effective communication is not so much what is *said* but what is *heard* – the same objective 'information' may be received by different people in different ways (we have already seen the power of 'messenger' in nudging; see Chapter 6). More precisely, the cognitive response model assumes that for attitude change to occur it is not enough to receive and process the message. What matters are the thoughts ('cognitive responses') of the recipient which are elicited by communications. It assumes that listeners are active and relate messages to their own knowledge, experience and *schemas* (i.e., cognitive structures that organize and assimilate new

information). Existing cognitive responses are called into play; and it is these self-generated thoughts that mediate attitude change and actual behavior.

The world of advertising quickly caught on to this fact – they suspected as much for a long time. As seen above, the vast majority of commercial advertisements do not contain much of an ‘argument’ (indeed, there is a real poverty of information), yet they persuade. They do not work through the ‘central route’: careful and thoughtful consideration of the arguments. Instead, they derive their influence from the ‘peripheral route’: emotional, with evaluative conditioning, mere exposure and heuristic processing (e.g., “you can trust an expert”). What is now widely appreciated is that attitude, belief, etc. *follow* a change in behavior (however, induced) – we have already seen an example of this effect with *cognitive dissonance* in Chapter 6.

This is why today, there is typically an emotional invocation in advertisements, often contained in some form of an ongoing story line. A good example is seen in the classic television advertisement for Nescafé Gold Blend which contained more romance than coffee – as the lady coyly replies when asked by a dinner party guest whether she has met her new (and attractively charming) neighbor, “I’ve popped in for coffee” (the rest is left to the lively imagination of the viewer!).

A/B TESTING: A METHOD OF EVALUATION

How can we know that what advertisers think will work actually does? Over the years methods for evaluating the effectiveness of communication campaigns have been developed. For example, the internet travel company Booking.com (www.booking.com) is an especially interesting example because it has invested heavily in, what is known as, A/B testing (see text box). By virtue of the fact that they have a large number of visitors each day, it is reported that they run many such A/B trials every day of every week, and that their system is automatically optimized when new features have been shown to work (i.e., more people have pressed the ‘buy’ button on version A as compared with version B – these versions can be almost anything, for example, position and size of button on page).

A/B TESTING

A/B testing – also known as ‘split testing’ – attempts to bring scientific methodology to marketing. It seeks to determine which factors work in communication campaigns by testing the effectiveness of two or more different variations of messages. This could consist of any set of differences: use of different words in a sales letter; colors, pictures and shapes used on websites; the order of presenting material; what is shown on a website when loading (this can mimic loading a page); devices to ‘close’ the sale (e.g., x number of people are looking at the same product; limited period only) and so on – the list is endless. The goal is to determine which communication works best. All of us are part of large experiments of this type on a daily basis without even knowing it (see booking.com in text). There now exist many computer programs that can be used for this specific purpose, for example Google AdWords. A/B testing is the marketer’s form of a randomized controlled trial (RCT, Chapter 6): customers are randomly assigned to different conditions, allowing companies to test which message works best.

Booking.com routinely use a number of ploys to prevent the indecision shown by many users: their goal is to convert browsers into buyers. How do they do this? One of us was recently looking to book a hotel in Warsaw. Not only were we reassured that they found the best price on the internet, after a few minutes they sent a pop-up message stating that the price was guaranteed only for 10 minutes and that 6 other people were looking at the same room (whether these were Booking.com staff, we shall never know). All of this is intended to induce a state of impulsiveness to avoid losing the apparent bargain (calling into play loss aversion; see Chapter 4). Helpfully, Booking.com allow the use of a debit/credit card to ‘secure’ the room, but no money is taken at this point. Given that we may know the intention of these ploys, they still work! (As a University credit card was needed to pay for this room, and thus there was a delay, the room that seemed so scarce an hour before was found still to be available much later!)

PSYCHOLOGICAL FACTORS IN CONSUMER DECISION MAKING

The way we go about forming judgements and making decisions seems to have deep roots in our evolutionary past (we saw some of this when we discussed monkeynomics in Chapter 5). A splendidly readable book by the evolutionary psychologist Geoffrey Miller, *Spent: Sexual, Evolution and Consumer Behavior* (2009), discusses in amusing detail how consumerism serves biological imperatives, especially signaling sexual *fitness* to potential mates: ‘from mating to marketing’ as the dust cover puts it. Of interest too, Miller considers the role played by personality, which in Chapter 6 we saw has implication for economics. Miller believes that the display of expensive (Veblen) goods is an attempt to signal four main personality traits: intelligence, conscientiousness, openness to experience and agreeableness. Therefore, what might seem a foolish decision in the short-run needs to be seen in the light of longer-term utility maximization, especially of a biological nature. These biologically-rooted psychological factors are also reflected in the example of *transaction cost*, which we consider next.

TRANSACTION COST

Imagine yourself lying on a beach on a very hot day. You still have some ice water, but now you fancy an iced bottle of your favorite beer. A friend is going off to make a phone call and offers to bring back a beer for you. In this experiment, two conditions are presented to subjects: they are told the beer is available only (a) in a fancy and expensive nearby hotel, or (b) in a grubby and cheap corner shop (Thaler, 1983). Your friend asks you how much you are willing to pay for it – your friend tells you that they will buy the beer only if it costs as much or less than the price you state, otherwise they will come back empty handed. What price do you go for?

The tendency is for people to give a higher value for the fancy hotel version than the run-down grocery version (medians: \$2.65 and \$1.50 respectively) – it is made clear to study participants that the actual bottle of beer is identical in *all* respects. Now, from a

mainstream economics standpoint, this is a very strange decision because it is the same beer in both cases. Specifically, (a) in both versions, the act of consumption is the same – drinking one beer on the beach (and the beer is identical); (b) study participants understand that they are not being asked a different question: “What price do you expect to have to pay?”

This rather unusual behavior is related to something called *transaction utility* – it cannot be *consumption utility* because the beers are identical at the point of drinking. It seems that we have a reference price for the two types of sales outlet and this affects our decision – even when we are not doing the transacting (i.e., going off to the hotel/shop ourselves).

Although non-rational from the standpoint of mainstream economics, it is commonplace in the real world. Indeed, much of marketing is about manipulating perceptions of transaction utility, reflecting the effect of a reference price that is deemed to be fair for the product being exchanged. As such, transaction utility reflects social context and perceived fairness – according to Thaler who originated this concept in 1983, a fair price is said to reflect the seller’s cost and fair profit (obviously, a fancy hotel has much higher overhead costs than a corner shop). Once more, it is not all about money; the social context of the transaction is important too.

THE EASE OF DECISION MAKING

There is a second form of transaction cost which relates to decision making. Making it easier for the consumer to come to a decision is one of the major functions of advertising and marketing – it disregards System 2 cognitively deliberate (reflective) thinking and seeks to exploit the vulnerabilities in System 1 automatic (reflexive) responding. We see this in shops with the positioning of goods, lighting, signage, even the design of the floor tiles (to slow down customers), to nudge – bit-by-bit – the customer’s buying decision (see text box). What many people perhaps do not know is the extent of analysis used by the larger retailers. Not only do they collect valuable information via loyalty cards – or increasingly online shopping (and now Tesco have their own payment system

ALTERING SPEED OF LOCOMOTION IN A SUPERMARKET

In-store traffic flow, as moving around a shop is called in the world of consumer research, is a little researched topic, despite the fact that this is what we are doing 80% of the time when shopping. Work published in 2016 by Van den Bergh, Heuvinck, Schellekens, and Vermier tested a number of floor patterns in a series of laboratory and field experiments. The results showed that customers walk faster with fewer ‘progress markers’ on the floor, but only if they have a goal in mind (e.g., to reach the hot food counter). The idea is that the number, nature and salience of progress markers along the path to a physical location signal goal progress – cues in the environment influence our goal-directed behavior. This is of value to the shop because sometimes they will want customers to walk faster (e.g., entrance/exits) while at other times slower to allow them to browse (e.g., while at high value/profit shelves).

app which also gathers this information) – they use scientific theories of biological (e.g., foraging) behavior. Large retailers have highly detailed information on many millions of their customers, and they use truly sophisticated mathematical modeling that allows them to predict when customers are most likely to ‘defect’ from their usual brands and ‘forage’ for new ones – it is at this predicted point that retailers can target them with special offers to nudge this changing preference a little further down the path to purchase.

THE CUSTOMER JOURNEY

But, even before we get inside the shop, the *customer journey* has already begun. It starts with the initial thought of the shop (shaped by advertising, as well as previous experience); the entrance is made to look exciting, and the layout is designed to ease the physical journey around the store, or sometimes hamper it if the retailer wants the customer to slow down and browse – everyday items (e.g., bread) are often in the far corner, so a journey through the shop is required,

and this allows more opportunity for in-store merchandising to influence buying decisions. When it works well, the customer journey seems the most natural thing in the world, and none of us feel in any way manipulated. In consequence, most of us leave the store with heavier bags and a lighter wallet than we expected when entering: none of this is happenstance. And nor do things have to be terribly clever: the sign with tasty looking fruit; the Grab and Go sign above the chiller display unit containing sandwiches, the two-for-one offers. In psychological terms, the typical supermarket allows expression of basic (in a biological sense) instincts for hunting for food, drink, bargains, novelty, and so on. In its mundane way, shopping is both safe and exciting.

We might then stop for a coffee on the way home and go to Starbucks, where the barista will ask our name which they write – often incorrectly – on *our* coffee cup. They are cleverly exploiting the phenomenon of ‘sensation transfer’ in which warm feelings we have about something (in this instance, our name) transfers to the contents of the cup. Something similar, ‘Nudging by names’, is widely used by supermarkets – giving brands a homely sounding name or calling them ‘private label’ (e.g., Hughes, 2011). (Major retailers have been criticized for this practice.) Not only are we willing to pay more for such named products, but they taste better to us too – calling something ‘organic’ elicits greater psychological value, but in blind taste tests most people cannot tell the difference.

Despite the fact that our fridge is probably now bursting at the seams, we might decide to go out for a meal that evening with friends at a nearby restaurant. We think we can order what we like, but the choice architect has other ideas. Upon being seated, it is likely that the wine menu will be handed to one person, and more often than not this leads to the question: “white or red?” not usually, “does anyone want wine?”. It is natural and seemingly polite to reply “white” or “red”. It is also likely that the wine list contains pages of foreign wines, many of which are hard to pronounce; but we are saved by the menu helpfully nudging us to the ‘house wine’ (which might be an inferior decoy; see below) and we decide to go for the slightly better Chilean Merlot which seems a good compromise. The fact that wine glasses are already on the table when we arrive sets the social convention

that this is a restaurant where wine is taken with the meal. The interesting thing is that no one at the table realizes that their choices have been constrained from the moment they set foot in the restaurant. Few of us would want to dwell on this fact – after all, this might well spoil the meal (which probably consists of one of the limited number of ‘Chef’s Specials’ helpfully pointed out by the waiter).

And this is not all when it comes to the psychological value of our restaurant experience. Research shows that if you order first in a restaurant, the food tastes better, as it does if it is served on heavy plates, but its taste is diminished if it is served on a red plate. The Oxford University Professor of Psychology, Charles Spence, believes that half of the pleasure we get from a meal comes from such psychological factors – these and many more examples are discussed in his 2014 book, coauthored with Betina Piqueras-Fiszman, *The Perfect Meal: The Multisensory Science of Food and Dining*. It includes such delightful insights that classical music played in the background induces a feeling of sophistication and diners spend as much as 10% more, and circular tables evoke greater feelings of pleasure, and such like. (Spence’s 2017 book, *Gastrophysics: The New Science of Eating*, is also well worth a read.)

BUYER’S REMORSE AND REGRET THEORY

However, there is always potential regret with a purchase, and this fact underlies consumer motivation. Buyer’s remorse (or buyer’s regret) is the sense of regret some consumers experience after a purchase, and it occurs more frequently after the purchase of an expensive item because the consequences of potentially having made the wrong choice are greater.

Although it is questionable that a well-known consumer brand is significantly better (in objective value terms) than a lesser known one, we are willing to pay a higher price for the former because it gives us peace of mind. We will be less likely to engage in regret and self-recrimination. The same is true of branded medicine. Many of us rush off to buy branded aspirin (e.g., Anadin) and ibuprofen (e.g., Neurofen) – often, they are branded as ‘express’, fast acting and the like, and to confuse things caffeine and other painkillers are

added. Even if we had the knowledge, time and effort to buy these things separately, and for much lower cost, many of us would not. It is as if we have a desire to ‘trust’ branded products. Indeed, to the extent we believe this, such drugs may work, in part, by the placebo process, which is real enough.

As the advertising guru Rory Sutherland makes clear, brand management is all about reassuring the consumer they have made the right choice and they will not later regret it. Rory also makes the good point that our evolutionary past instilled in us the desire not to maximize in a neoclassical sense, but to *satisfice* in such a way to avoid catastrophe. As any biologist will readily inform us, there are more ways to die than to survive, so risk aversion is a very sensible strategy even though it means we may not maximize our *immediate* utility (at least as defined by expected utility theory; see Chapter 3) – of course, we are maximizing our subjective utility by taking uncertainty and risk out of the equation. All of this means that we have a very strong tendency to trust well-known brands – after all, if my flat screen Sony television turns out to be no good, I can hardly be blamed for making the wrong decision, but how different it would be with a brand no one has ever heard of – stupid me!

REACTANCE THEORY

Few of us like to be told what to do. This knowledge is used in marketing.

An effective ploy to achieve behavior change, including purchasing behavior, is to capitalize on the fact that, in all areas of life, persuasion is usually better than compulsion. This is what we know from the commercial world, where in any case compulsion is rarely an option. Furthermore, individuals are influenced in reverse proportion to the force being applied – in a Newtonian mechanical-like fashion, there is an opposite force. In fact, there is a term for this effect in social psychology: *reactance theory* (see Brehm, 1966).

Specifically, externally imposed sanctions, for example by the government, can increase the attractiveness of the associated behavior (see text box). For some people, there is something especially alluring about forbidden fruit.

A CIGARETTE BRAND TO DIE FOR

For a period of time in the 1990s, there appeared on the market a brand of cigarettes called *Death*. Given that cigarette companies could no longer avoid the connection of smoking and premature, and likely painful, death, entrepreneur B. J. Cunningham invested his life savings to build the Enlightened Tobacco Company and to create and market this innovative brand. Living up to its name, Death Cigarettes disclosed its hazardous nature by having a skull and crossbones on the packaging – for those who yearned for the prospects of a little longer life, Death Lights was available. This brand especially appealed to the ‘young underground punk rock’ consumer market. In an ironic twist of fate, the firm’s trademark was successfully challenged by an alcohol company called Black Death. In a similar manner to many of those who consumed the product, the company met an early demise. (The case study of Death cigarettes was described in O’Shaughnessy & O’Shaughnessy, 2004.)

Reactance theory is the attempt to provide a psychological explanation of such seemingly perverse effects. It states that an aversive state is generated by restriction of an individual’s freedom of choice over behavioral outcomes – it appeals especially to those of a personality disposition in the direction of sensation seeking and risk taking. As we have seen in previous chapters, such external pressure can lead to extrinsic motivation which can ‘crowd-out’ intrinsic motivation.

MONEY: PRICE AND PLOYS

The saying, “Not everything that counts can be counted, and not everything that can be counted counts”, is (probably falsely) attributed to Albert Einstein – the fact that it is so attributed attests to the value people place on it. An earlier religiously motivated saying is “Money is not what really counts, though it must be counted”. Yet, despite the fact that much of the value we place on things in life (e.g., love of a child) cannot be sensibly measured by the metric of money, nevertheless few of us have the luxury of sailing through life without money being at the forefront of our mind. Commercial

enterprises exploit the psychology of money – this is brilliantly discussed in Adrian Furnham’s 2014 book *The New Psychology of Money*. There is little doubt that financial products are especially prone to the biases inherent in judgement and decision making. For example, we get anchored to the minimum payment on our credit card, and for this reason financial companies set deliberately low monthly minimum payments so we do not pay back the balance as fast as we might, thus increasing long-term repayments.

Other pricing ploys are routinely used, such as the ones we will now discuss.

ANCHORING EFFECTS

We have already seen the power of anchoring effects in Chapter 4. For example, merely writing down the last two digits of one’s social security number influences the subsequent decision regarding how much one is willing to pay for everyday items. Other ploys include highlighting the scarcity value of a good or service – ‘last day of sale’, ‘limited supply’, only a maximum of 12 cans of soup per customer – and the day following Thanksgiving Day in the United States (the fourth Thursday of November) is called Black Friday where, increasingly in the UK as well, there is a rush for bargains (although as news outlets such as the BBC have reported, often these ‘bargains’ are cheaper at other times of the year). Building-up psychological excitement and tension is usually good for business.

Although, such ploys can appear gross and tacky, suitably used they work their commercial charm – to regress to North American vernacular, we just seem ‘suckers’ for them (despite the fact that few of us can be unaware of their purpose) and we do not seem really to mind. Even professionals are prone to them. For example, it is reported that estate agents place a higher monetary value on a house if it comes with extensive documentation; and teachers anchor the marks of their students on the basis of previous grades attained – from what we know from behavioral economics such outcomes should not be unexpected. In Richard Thaler’s words, these should all be ‘supposedly irrelevant factors’: they are far from being any such thing. The neoclassically-inclined economist is most assuredly getting a bald patch from all that scratching of their head.

FRAMING

As in so many other areas of economic life, framing is important too. When Delta Airlines declared that customers who do not purchase their tickets online would be charged \$2.00 extra, this led to an outcry from customers who did not have internet access (e.g., Mehta, 1999). Reframed as a *saving* of \$2.00 when booked online was altogether more acceptable – but *nothing* changed financially! When credit cards were first introduced, retailers wanted to surcharge customers for using them, but this was resisted by the finance industry because they knew that customers would be deterred from using them – some companies do still impose a small charge where this is feasible. Instead, garages offered a ‘discount’ for cash. All of this is now in the distant past and today there is little differentiation on price and the credit card charge has been absorbed into the overall cost of doing business – this cost is now incurred by cash buyers but as they are generally unaware of this fact, they do not complain.

LOSS AVERSION

As seen elsewhere in this book, whether a transaction is framed as a loss or gain has important consequences – we love a £5 discount and hate a £5 surcharge, even though we end up paying the same amount for the product or service. Therefore, exactly the same *change* in price framed in different ways has a big psychological effect on how we think, feel and behave. The powerful influence of loss aversion in marketing was shown in buyers’ reactions to price changes to insurance policies: price increases had *twice* the effect on customer switching, compared to price reductions of the same magnitude.

DECOY PRICING

The ‘decoy pricing effect’ is an especially effective ploy (see text box for an example). In the technical language of behavioral economics it goes by the name of ‘asymmetrically dominated choice’ or ‘asymmetric dominance effect’ (e.g., Huber, Payne & Puto, 1982). The effect consists in the fact that our preference for one

option relative to a second option is affected by the addition of a third (less attractive, perhaps more expensive) decoy option. With the addition of the decoy, customers are more likely to choose the more expensive of the first two options. So, if you go to the gas station and you have three choices of fuel (Standard, Premium, Super-Premium), more people will go for Premium than if they were

EXAMPLE OF THE DECOY EFFECT

Somewhat appropriately, a good example of the decoy effect was seen with the marketing of *The Economist* publication. In the USA, they offered three options:

1. Web Subscription – \$59
2. Print Subscription – \$125
3. Web and Print Subscription – \$125

Option 1 (\$59) appears reasonable. Option 1 (\$125) seems a tad expensive just for the print version. But, wait Option 3 looks like a great deal: web and print versions, all for \$125. Dan Ariely (2008) tested out these options with MIT students. His results were:

1. Web Subscription – \$59 (16% of students)
2. Print Subscription – \$125 (0 students)
3. Web and Print Subscription – \$125 (84% of students)

Total revenue: \$11,444

Well, maybe this does not have anything to do with the decoy option. To test this, next he removed the decoy option. This is what he found:

1. Web Subscription – \$59 (68% of students)
2. Web and Print Subscription – \$125 (32% of students)

Total revenue: \$8,012

Of course, the cost of producing the print version would need to be factored into the final net profit of the different options.

presented with Standard and Premium alone. Well, what might be going on?

When making a choice between two options, things are rather difficult: Standard or Premium? Well, I do not really know! But, now with three options, it is likely not going to be the Super Premium, so I will opt for Premium. This is an example of where more choices make the decision-making process easier – and more lucrative for the retailer. It also plays into the behavioral notion that people can pay *less* by not going with the Super Premium option: now, that seems more satisfying! Under these circumstances, it takes a strong will to defend the decision to go for the, apparently inferior, Standard option.

Decoy pricing is routinely used by large companies, and no less a company than Apple. There is a reason why many Apple products are sold in a pricing series, for example iPhones can be purchased at different price points partly based on their storage capacities (e.g., 32GB, 128GB or 256GB). The existence of the highest-price option with larger storage capacity makes the lower-price options in the line-up look like bargains although other brands might sell similar products at lower prices (comparisons to other brands are obscured through Apple's unique design). The purpose of the decoy product is to make the other products in the company's product portfolio look better. (This is important to Apple in production terms because they need to know in advance how many millions of their specific product they need to manufacture.)

We can start to think what psychological processes are driving the decoy pricing effect. To begin with, the fact that it exerts a 'force' on the consumer means they can go with the flow and use fewer cognitive, emotional, effort and time resources in making a decision – this reduces the 'transaction cost'. In other words, it reduces psychological labor. In addition, there may be two additional effects at play: (1) the *attraction effect* and (2) the *compromise effect*.

ATTRACTION EFFECT

Going back to the decoy pricing of *The Economist* (see text box), the attraction effect is one of its main aspects: it is difficult to compare two options with very different attributes, but much easier to com-

pare when they have very similar attributes. It is not easy to compare the print-only and web-only versions because they are so different, but it is much easier to compare them when they come in a bundle: with imperfect product information, consumers will tend to choose the bundle because it is the only product which provides complete information and doubt and uncertainty are markedly reduced.

COMPROMISE EFFECT

People often prefer to avoid extremes – sometimes called ‘extremeness aversion’ – and they often prefer instead to compromise (there is also evidence that people do something similar when they fill in a lottery slip by avoiding numbers on the edges). This tendency gives rise to the ‘median’ product being preferred. When we are presented with three product choices, we tend to think that the cheapest one is clearly inferior and the most expensive one is overpriced with non-essential features, therefore the middle option seems sensible. (As discussed above, ‘Veblen goods’ violate this principle.) In addition, we might not want to be thought either as a ‘cheapskate’ or someone who ‘shows off’, so the middle choice is the safer, more socially desirable, option.

THE CONSUMER HEDONIC TREADMILL

Now that we know how commercial firms employ anchoring, framing, loss aversion and decoy pricing to make purchases more attractive, will we still fall for their ploys? Probably, yes. This is predicted by the phenomenon of ‘hedonic adaptation’, also known as habituation (e.g., Frederick & Loewenstein, 1999). This phenomenon refers to the fact that the pleasure, satisfaction and utility we get from products and services wanes and we need another hedonic ‘hit’ (a new stimulus) to go back to the previous hedonic level. This demands that commercial products and services are novel and exciting and the ‘new thing to have’. We see this writ large in fashion – last year’s must-have coat is this year’s *faux pas*.

We all experience hedonic adaptation: the new car is exciting for some time but then becomes a normal part of life, as we have adapted to seeing it sitting in the driveway – the first few scratches

may also serve to lessen our utility! Overall, the emotional impact of consumption tends to be short-lived. As we are not aware of the effects of hedonic adaptation, we tend to over-invest in acquiring new possessions and, thus, are prone to the commercial practices and ploys discussed above.

Hedonic adaptation is thought to occur because it allows us to retain the ability to react to novel stimuli, a useful trait for pre-historic people, but much less of use in modern times because it means that we need constantly to look for new sources of (apparent) happiness. Once more we see the importance of biological factors in consumer psychology. The image of a hedonic treadmill, on which individuals need to keep walking just to stay in the same place, describes this effect quite nicely – the mouse on the running wheel is another instructive image.

The hedonic treadmill supplies an account of why we tend to overestimate the impact of choices on our well-being: we are bad at forecasting how we will adapt (get used) to new products and services. We see this effect clearly in the case of positive and negative changes in life: winning the lottery or becoming disabled – in the case of bad events, this is something of a psychological blessing as we adapt to the displeasure ('disutility' in the economist's jargon) of such negative life events, although, it needs to be said, never quite as fully as to positive life events.

Daniel Kahneman has written extensively on the important role played by attention in our economic life. We are never quite as satisfied as when we are thinking of buying the new car, planning the wedding, and looking forward to the birth of a baby. But, once these things materialize, there is typically a drop in satisfaction: putting aside the problems associated with them, our attention (and thus pleasure seeking) is already off elsewhere. The whole point of advertising and marketing is to ensure that attention is directed to the acquisition of *new* commercial goods and in one – rather dismal – sense this means the neglect and withdrawal of affection of previously acquired goods.

Quite a lot is now known about the hedonic treadmill. When surveys ask about well-being 5 years from now respondents tend to take into account their current level of aspirations, which they use

as an anchor to judge their future states. This tends to lead to an overestimation of their future well-being because it fails to take into sufficient account that aspirations do not remain constant – social comparison ensures that they do not (see Chapter 6)

AFFECTIVE FORECASTING

Following on from this theme, the general finding from research is that we are not aware that the well-being effects of changes in life circumstances might be smaller than anticipated. As we have seen, this is due partly to hedonic adaptation, but also to social comparison and changes in aspirations. This fact leads to failures in anticipating the consequences of our decisions on future well-being. The prediction of one's emotional reaction (affect) to future events has been termed 'affective forecasting' (or hedonic forecasting) and it has been repeatedly shown that individuals tend to overestimate the effects of positive events and underestimate the effects of negative events on their future well-being. This is partly due to focalism (also known as *focusing illusion*; i.e., our tendency to focus on one aspect of life when we assess the impact of events on our future well-being). Couples who are expecting a child may focus on how much happiness holding a baby will bring them, but they tend to ignore that sleepless nights can be very detrimental to happiness.

A well-known study asked people if they expected any changes in happiness if they moved to California (Schkade & Kahneman, 1998). Most respondents agreed that such a move would certainly increase their well-being because they focused on the pleasant weather. However, they did not consider other aspects, such as the high costs of housing and traffic jams which are also part-and-parcel of life in some parts of California – another example of how salient information can cloud our decision making.

To illustrate this point, let us consider an example that most people expect to be the key to everlasting happiness: winning the lottery. Studies of lottery winners – which admittedly have fairly small sample sizes – show that these lucky people are on average actually not happier in the long-run than non-winners (Brickman, Coates & Janoff-Bulman, 1978) (a few even claim that the win has ruined

their life). Hedonic adaptation implies that lottery winners get quickly accustomed to their new-found wealth. And that is not all.

If the win is quite sizeable they may buy a larger house in a fancier neighborhood, which means that they quickly change their peer group. They might now be a 'big frog' compared to their previous wealth, but moving to a larger pond means that they are suddenly surrounded by other, even bigger, frogs; therefore, their absolute, objective financial status may have improved but their *relative*, subjective status may have gotten worse (see text box).

As economist Robert Frank expressed very aptly in his 1985 book *Choosing the Right Pond: Human Behavior and the Quest for Status* there is a difference between being a big frog in a small pond and a small frog in a big pond. Status, and the well-being we derive from it, because of the effects of social comparison, depends on the pond we choose. Overall, increasing aspirations, caused by social comparison and hedonic adaptation, can therefore easily counteract any short-term positive well-being impact a lottery win may bring.

DECISION UTILITY

A major point of behavioral economics is to show that people often misjudge the effects of their choices on their well-being – assuming they can be said to have consistent preferences in the first place. As Daniel Kahneman would say, their *decision utility* – which describes how much satisfaction they assume their choices will bring them – does not necessarily match their *experienced utility* – which is the satisfaction they actually obtain from their choices (Kahneman, Wakker & Sarin, 1997). You may well think that a new car will make you very happy before you buy it, and realize only later that the initial euphoria about the purchase did not last as long as expected.

Returning to the issue of how to define and measure utility, the important point here to note is that the revealed preferences approach considers only *decision utility*; but this is not seen as a problem by neoclassical economists because they argue that experienced utility cannot be measured and, in any event, is too abstract to be meaningful. This position is not accepted by all economists, and even fewer (if any) psychologists.

BIG FROG IN A SMALL POND

The Dutch Postcode Lottery (PCL) offers a unique opportunity to examine whether people are more likely to buy a car once a neighbor parks a shiny new BMW in front of their home. The Postcode Lottery randomly selects a postal code and distributes prizes to every lottery ticket buyer in that postal code. One of these prizes is a new BMW, which is worth considerably more than the cash prizes of 12,500 that the other ticket holders receive. Researchers surveyed households in winning postal codes six months after the draw and found that people who did not participate in the lottery and whose neighbors had won the new BMW were more likely to buy a car during the six months after the lottery than non-PCL participants who lived in postal codes that did not win the lottery (Kuhn et al., 2011).

This example shows in a very elegant way that most of us do, indeed, try to keep up with the Joneses; contrary to what standard economic theory would predict, my neighbors' consumption does matter.

If the above is true, can it really be the case that people have their own preferences; or are these preferences given to them by consumer society which they then try to satisfy? In any case, the neoclassical notion of reference independent preferences and choice is seriously undermined by behavioral economics research. Of course, this was the very point of such influential works as J. K. Galbraith's 1958 book *The Affluent Society* (see Chapter 2).

THE POWER OF SOCIAL MEDIA

So much of hidden persuasion is now on the internet. This has both positive and negative features. A BBC television Panorama program, first shown on 8th May, 2017, reported that 32 million people in the UK use Facebook, and 2 billion worldwide (MacIntyre, 2017). It can influence elections and is currently unregulated. Facebook's CEO Mark Zuckerberg: "What I care about is giving people the power to share, giving every person a voice so we can make the world

more open and connected.” (Zuckerberg, 2016). However, Facebook users reveal more information about themselves than they are generally aware, which allows advertisers to produce targeted messages specifically tailored to groups of potential customers (or voters) – much of this was revealed by Mark Zuckerberg’s testimony before a Congressional Committee in 2018, as well as wider discussion of how Facebook data has been used by third-parties (e.g., by using ‘psychographic’ techniques that map specifically designed persuasive messages to the personality profiles of the consumer or the voter).

Facebook’s complex algorithms track our online lives, but they are a closely guarded secret: our online behavior is recorded and shared with advertisers. Politicians can micro target communication to people who should be susceptible to their messages based on their online behavior. Donald Trump’s campaign team exploited this technology: they took the names and addresses of the electorate, sent them to Facebook and back came detailed information on each person – these names were then put into an ‘audience’ and they were targeted with specific political messages (e.g., Beckett, 2017). Major political parties have dedicated Facebook staff on their campaign teams to maximize their political messages. To attract attention, campaigns often do not shy away from using ‘click bait’, consisting of sensational and sometimes downright false stories (“fake news”).

It is quite possible that the use of social media may be decisive in political campaigns. This is seen in the once-in-a-generation Brexit Referendum in June 2016. Speaking at the Nudgestock conference in Folkestone (9th June, 2017), Dominic Cummings, who was the Campaign Director of Vote Leave, revealed that his campaign team worked closely with Facebook to get information to target those of the electorate who were still undecided – those who were decided did not need much further encouragement and those who were opposed were probably beyond reach in any case and, therefore, could be ignored. Specific behavioral science principles were used. For example, one major slogan was ‘Take back Control’. The key word is ‘back’ because it implies that something has been taken from us, even stolen. Cummings also revealed that he did not employ economists or market research pollsters because he thought they may have preconceived ideas; instead, he employed physicists who are trained

to look at data in a very hard headed scientific way and are less likely to engage in self-delusional thinking. He said he was impressed by the comment of the famous physicist, Richard Feynman,

The first principle is that you must not fool yourself and you are the easiest person to fool.

(Cited in Feynman, 1985)

We may never know the extent of the influence of these campaigning ploys, but given that the Leave vote won by only a narrow margin it is possible they were crucial. In any event, the use of behavioral science tools in political campaigns is the focus of much controversy and debate in society.

There is a body of evidence that speaks directly to the question of the effectiveness of such political campaigns. In a systematic review of field experiments, Kalla and Broockman (2018) found hardly any evidence for an effect on voting intention, and there was only tentative evidence for the effectiveness of campaigns that contained three features: (a) the candidate assumed an unusually unpopular position; (b) the campaign invested heavily; and (c) managed to identify persuadable voters. Most forms of political campaigns do not conform to these features. However, this is not to say that such political campaigns do not work. As Kalla and Broockman point out, it is possible that such campaigns shift the focus of the political debate and this may influence what is deemed important in the mass media, which could affect voters.

Companies such as Facebook have a detailed understanding of our psychology and, also, of our network of friends. This information allows powerful predictions of our susceptibility to certain messages which can only increase in sophistication in the years to come. This behavioral technology will enable companies to predict with ever increasing degrees of accuracy consumer preference and choice.

Commercially valuable information on our behavior, attention span and even emotion can come from some unlikely sources. For example, a malfunctioning advertising display in a pizza shop in Oslo, Norway revealed that it was, in fact, recording customer profiles: age, gender, attention time and facial expression (e.g., Pettit,

2016). In another unusual case, a wifi-enabled sex aid was transmitting information back to the company. Following a court ruling, the Canadian firm Standard Innovation, agreed to pay CAN\$4 million (£2.4 million) to members of the public who bought and used its We-Vibe products (e.g., Hern, 2017) (this firm had been collecting data and recording when customers used the ‘sex toy’, including information on the intensity of the vibration settings): is nothing private anymore?

CONCLUSIONS

The *Mad Men* of the creative industries of advertising, brand management and marketing, and now increasingly highly targeted social media commercial activity, have never been enamored with the notion that the consumer has stable and consistent preferences and responds only to ‘information’ in even an adequately rational way. Instead, they find greater commercial reward in assuming that needs, wants, wishes and desires can be manufactured and that psychological value could be added to products and services, significantly exceeding objectively-defined value which is often rather meager. Studies of commercial practices and ploys provide important insights into real judgement, decision making and behavior in everyday economic contexts – in a way, the commercial world is one big laboratory in which hypotheses about the human economic mind are tested daily.

We have attempted to show in this book the wide-ranging and important applications and implications of behavioral economics. It is a revolution still in progress and it is still far too early to foresee its true long-term impact.

FURTHER READING

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GLOSSARY

A/B testing (split testing). A form of controlled experiment, often used in marketing, in which the effectiveness of two (or more) versions of a message is tested (e.g., letters, websites, ads). The response (e.g., in sales) to the two A/B versions are then examined to determine which version works best.

Affect. The expression of feelings or emotions; one's emotional state.

Affect heuristic. A mental shortcut that allows people to react to novel stimuli quickly by relying on their emotional response (their 'gut feeling').

Affective forecasting (hedonic forecasting). The prediction of one's emotional reaction (affect) to future events.

Allais paradox. A choice problem described by Maurice Allais in 1953, which was one of the first to demonstrate experimentally that actual observed choices are not always consistent with one of the major criteria of rationality (i.e., expected utility theory).

Ambiguity aversion (uncertainty aversion). The propensity to prefer risk (where the probabilities of outcomes occurring are known) over uncertainty (where these are not known).

Anchoring. A cognitive bias that describes people's tendency to rely too heavily on 'anchors' (traits or pieces of information) when

making decisions. This is often the first piece of information that is received and, thus, it has more influence than it deserves.

Anchoring and adjustment heuristic. The tendency to base estimates (or decisions) on a familiar value or readily available number, and then shift up or down from that ‘anchor’ to arrive at a final estimate/decision.

Animal spirits. Term coined by John Maynard Keynes in 1936 to describe that economic decisions are much influenced by psychological factors (instincts and emotions), which, among other things, drive ‘consumer confidence’.

Attraction effect. The observation that adding an irrelevant, possibly inferior, alternative to a choice set increases the attractiveness of the original choices (see also Decoy effect/asymmetric dominance).

Authority bias. We are overly influenced by who communicates the message; this is seen in trusting actors in a white coat selling a medical product, and was seen starkly in Stanley Milgram’s series of classic studies on obedience to authority.

Autokinetic effect (autokinesis). The illusory, apparent movement of a stationary light in a dark environment. The light seems to move because of a lack of visual reference points in the environment.

Availability heuristic. A mental shortcut that relies on examples that immediately come to mind when forming judgments. When an unlikely or infrequent event comes to mind easily, we tend to overestimate the probability of its occurrence.

Axioms. Statements that are regarded as accepted assumptions, established truths – they are used as the foundations of a logical structure and are employed widely in formal economic reasoning and modeling.

Base rate fallacy (base rate neglect, base rate bias). The tendency to estimate the probability of an event based on specific, possibly irrelevant, rather than general (base rate) information.

Bayesian updating (Bayesian reasoning/inference). Based on Bayes’ theorem; probabilities of an outcome occurring are updated as more information is obtained.

Benign paternalism. An alternative idea to the *Libertarian paternalism* of nudge theory. Benign paternalism holds that people's preferences are not psychologically free; instead it argues that people's choice behavior should be nudged to achieve the best long term interests for them, even if they would prefer different decisions to serve their short-term interests. Benign paternalism does not rely upon the assumption of *preference purification* to maximize the utility of the economic agent as seen from their point of view (See Preference purification).

Biases (cognitive biases). A systematic error in thinking or deviation from rationality which affects judgments and decision making.

Big-5 personality traits (five-factor model). A widely examined theory of personality which describes five basic dimensions of personality: openness to experience, conscientiousness, extraversion, agreeableness and neuroticism.

Bounded rationality. Term first coined by Herbert Simon. It describes the idea that people have to make decisions under constraints, such as limitations of knowledge, time and thinking capacity, which affect the ability to process information in an optimal (fully rational) manner.

Buyer's remorse (or buyer's regret). The sense of regret that may occur after a (usually expensive or unnecessary) purchase.

Choice architecture. Term first coined in 2008 by Thaler and Sunstein, which describes the careful design of how options are presented to people in order to influence their choices.

Classical economics. A school of economic thought that was dominant in the 18th and 19th century, developed by Adam Smith, Jeremy Bentham, Thomas Malthus and David Ricardo, among others.

Cognitive dissonance. The psychological stress associated with a state in which attitudes, beliefs and behaviors are in conflict. As a consequence, people readily change thoughts, attitudes and beliefs to maintain consistency with their behavior.

Cognitive response model. A model which assumes that it is not the reception of arguments that mediates attitude change, but

rather that attitude change is mediated by the thoughts (cognitive responses) which recipients generate as they receive and reflect upon communications.

Commitment. Being dedicated to a cause or other people. People seek to be consistent with public promises, and to reciprocate favors.

Commitment device. A strategy chosen in the present to restrict future behavior in order to adhere to long-term goals, which may otherwise not be reached because of lack of will power or present bias. Commitment devices come in many different forms, for example study groups or pre-purchasing tickets for an event on a certain day to avoid procrastination.

Common prior assumption. An important assumption in Bayesian reasoning, which presumes that if people have access to the same information they will come to the same subjective probabilities. This implies that differences in judgements, beliefs and opinions only reflect differences in information.

Comparative cost advantage. First defined by David Ricardo, the comparative cost advantage describes the idea that each country should produce goods for which it has lower 'opportunity costs' than other countries (this is different from absolute cost advantage, which exists when a country can produce goods at the lowest absolute cost). With the international trade of these goods and services, there is benefit to the whole world stemming from the most efficient allocation of scarce resources.

Compatibility effect. First defined by Slovic et al, it describes the phenomenon that attributes of a stimulus carry more weight when they are compatible with the output. For example, when the value of a gamble is expressed in terms of money, people find it easier to use this aspect of the gamble to set the value of the gamble.

Completeness (Axiom of order). The assumption regarding preferences in neoclassical economics that states that a consistent set of preferences can be arranged in an ordering system.

Compliance. One of the broad categories of social influence. It describes behavior change following requests from others (implicit or explicit), but does not imply attitude change.

Compromise effect. The observation that consumers often prefer the middle option in a choice set as a result of wanting to avoid extremes.

Confirmation bias. The tendency to recall old information and interpret new information as evidence for supporting existing opinions and beliefs.

Conjunction fallacy (the Linda problem). When people are asked to compare the probabilities of a conjunction (two specific conditions) and one of its conjuncts, they sometimes judge the occurrence of both conditions occurring at the same time to be more probable than just one of them, but logically this cannot be the case.

Consequentialism. The doctrine that actions, policies, rules, and so on should be judged on the basis of their consequences; that is, the utility they yield.

Consistency. People try to act in a consistent way; this means that they can be induced to behave in a certain way, e.g., allowing a small 'speed kills' sign on their front lawn, which, in consequence, in order to remain consistent, they are more likely to agree to a much larger sign because they see now see themselves as a civic-minded citizen.

Conspicuous consumption. Term coined by Thorstein Veblen, which describes the public display of spending money on (luxury) goods and services to enhance social status and power.

Conversion. The internalization of others' beliefs, thinking and behavior (social norms become internalized). In contrast to compliance, conversion implies a change in attitudes, not just behavior.

Decision utility. The utility (satisfaction) people assume a specific choice will bring them.

Decoy pricing effect (Asymmetrically dominated choice, asymmetric dominance effect). Describes the effect that consumers tend to change their preferences between two options when a third option is added. This third option is typically clearly more desirable (dominant) than one of the original options, but less desirable than the other one (asymmetric). Typically, this third option (the decoy) is priced close to the original high-price option but it is less desirable. It is, however, clearly a better option

(dominant) than the original low-price option. Consumers will then often purchase the original expensive option because the decoy option changed their perception of the relative merits of the original options.

Defaults. A pre-set option the decision maker will receive if no decision is made. An important tool for the choice architect.

Demand (law of demand). A law described in microeconomics which states that price and quantity demanded are inversely related: as the price of a good (or service) increases, demand will decrease and vice versa (all other things being equal).

Dilution effect. The effect that obtaining additional information can reduce stereotyping, possibly by affecting reliance on the representativeness heuristic.

Discounting (delay discounting, time discounting). The way in which people discount (devalue) rewards which are not immediately available. The value of the future reward decreases alongside the delay. The specific manner in which people discount is described by the discount *function*.

Dominant strategy. In game theory, the dominant strategy for a player is the strategy that produces the best payoff for that player regardless of the strategies employed by other players.

Dual-processing theory. A theory in cognitive psychology which explains how information is processed in individuals in two different ways: 1. a fast, superficial, unconscious mode (System 1), and 2. a slow, effortful, controlled, systematic reasoning model, which can give rise to conscious experience (System 2).

Efficient market hypothesis. An investment theory which assumes that the price of stock market shares reflects all relevant, available information. It should, therefore, not be possible to 'beat the market' in the long-run.

Ego. A theoretical construct describing people's response to their internal workings. Behavior change can be facilitated by recognizing that people often act in ways to make them feel better about themselves.

Ellsberg paradox. A paradox in decision theory that demonstrates people's tendency to prefer a bet with a known probability (a sign of ambiguity aversion).

Endowment effect (divestiture aversion). The finding that we value things we own more than the things we do not own.

Equity premium puzzle. Describes the anomalous observation that the observed returns on stocks over the past century are much higher than returns on government bonds, implying that the stock market is required to pay an equity risk premium to attract risk averse investors.

Evaluation heuristics. Mental shortcuts involving choices.

Evaluative conditioning. The change in perceived value of a neutral (conditioned) stimulus when it is paired with a positive or negative (unconditioned) stimulus.

Expected utility theory. A theory of decision making under risk or uncertainty, which states that rational decision makers will choose the option with the highest expected utility.

Expected value (expectation). The expected value of X is the weighted average of all the values that X can take. To calculate the expected value of X, each possible outcome of X is multiplied by the probability of the outcome occurring, and all these values are then summed. In a gamble, it is the anticipated value of the bet.

Experienced utility. The utility (satisfaction) that choices actually bring.

Exponential discounting. A specific form of the discount function (see Discounting), in which discount rates are constant over time (contrast with hyperbolic discounting).

Externalities. The consequence of an economic activity (i.e., consuming or producing a good) which affects a third party negatively or positively without this being reflected in market prices (e.g., a factory pollutes a river but does not have to pay for cleaning it up).

Extremeness aversion (extreme aversion bias). The tendency to avoid extremes.

Focalism (focusing illusion). The tendency to focus on one aspect of life when individuals assess the impact of events on their future well-being.

Framing. The process of defining the context in which choices are presented.

Framing effect. A cognitive bias which describes that the form in which content and information are presented is highly relevant for decision making (for example, presenting a choice as a discount or surcharge in a shop).

Free market. An economic system in which prices are determined by competition between private firms without government interference.

Gambler's fallacy (Monte Carlo fallacy). The mistaken belief that past events affect the probability of future outcomes (e.g., when tossing a coin, a series of heads will be followed by tails). This reflects the tendency to expect outcomes to even out over the short-run.

Game theory (Economic games). The formal study of conflict and cooperation using mathematical models in which players make decisions while taking into account the decisions of other players.

Group identification. A psychological process whereby individuals develop part of their self-image based on the perception of belonging to a certain group (e.g., social or cultural group).

Hedonic adaptation (habituation, hedonic treadmill). The tendency to revert quickly to previous levels of well-being after experiencing positive or negative life events. Adaptation can be complete (i.e., return to the same level of well-being) or incomplete.

Heuristics. Mental shortcuts that are automatic, intuitive and do not require conscious thought. They were initially described by Tversky and Kahneman in 1974.

Homo economicus (ECON). A term used to describe an economic actor who is assumed to be consistently rational, self-interested and utility-maximizing.

Homo psychologicus. A term used to describe an economic actor whose decisions are subject to systemic errors (biases and heuristics). The term is defined in opposition to homo economicus.

Hot-cold empathy gap. A cognitive bias which reflects the fact that people underestimate the influences of visceral drives on their attitudes, preferences and behaviors. For example, they underestimate the effect of being hungry (hot state) when they have to make decisions when they are not hungry (cold state).

Hyperbolic discounting. A specific form of the discount function (see Discounting), in which discount rates are not constant over time. Discount rates are steep for earlier delay periods and smaller for longer delay periods.

Illusory correlations. The tendency to perceive a relationship between two variables when, in fact, none exists. They occur when two separate variables are paired together in such a way that overestimates their frequency.

Impartial spectator. Described by Adam Smith and defined in terms of the idealized person we wish to please in our dealings with other people (it is a form of conscience).

Inequality aversion (inequity aversion). People generally have a preference for fairness; a resistance to inequitable outcomes.

Insensitivity to sample size. A cognitive bias that occurs when people do not take the size of the sample into consideration when making judgments about the probability of an outcome occurring – smaller samples are less informative than larger samples.

Intertemporal choice. The study of choices that people make at various points in time, whereby current choices may affect available future options. Choices indicate how we value consumption today compared to future consumption.

Intrinsic motivation. Behavior is driven by internal motivation; doing something for its own sake.

Invisible hand. Described by Adam Smith in his 1776 book, *The Wealth of Nations*. An unobservable market force that helps reach and maintain equilibrium between demand and supply in a free market.

Judgment heuristics. Mental shortcuts involving making judgments.

Latent inhibition and learned irrelevance. The observation that familiar stimuli lose their power to attract people's attention and people stop responding to them.

Latent preferences. Hidden preferences which are not directly observed and may be inferred by revealed preferences in choice behavior.

Law of diminishing marginal utility. A concept in economics which states that the additional utility (benefit) gained from

consuming an extra unit of a good decreases with each additional unit that is consumed (all other things being equal). In other words, the consumption of the first unit of a good yields more utility than the consumption of the second unit of a good, and so on.

Law of diminishing returns. A concept in economics which states that the additional output gained from adding an extra unit of a variable production factor decreases with each additional unit that is added (if all other production factors are held constant).

Libertarian paternalism. The idea that choices and behavior can, and should, be influenced while maintaining people's freedom to choose. Such liberty-preserving nudges need to allow people to opt out. (See Benign paternalism)

Loss aversion. "Losses loom larger than gains" (Kahneman & Tversky, 1979); the tendency to prefer avoiding losses relative to achieving gains of the same magnitude.

Macroeconomics. The branch of economics that studies the aggregate economy and general economic factors, such as inflation, economic growth or the unemployment rate.

Mainstream economics. See Neoclassical economics.

Marginalism. The study of marginal theories in economics, which emphasize how much extra (marginal) output is gained by incremental additions of one unit of input (concepts covers opportunity costs and marginal utility, among others).

Marginal utility. The extra utility gained from consuming one additional unit.

Market equilibrium. State of the economy in which demand is equal to supply. The market-clearing price is the price at which the quantity that consumers demand and the quantity that firms are willing to supply are the same.

Matching law. A law which states that people will match their behavior/response to the relative rate of reinforcement.

Mental accounting. It describes the tendency to allocate money to separate mental accounts based on individual criteria.

Mere exposure effect (familiarity principle). The tendency to develop a preference for things or people that are familiar.

Microeconomics. The branch of economics that studies single factors and the behavior of individuals (consumers) and firms.

Minimal group paradigm. Pioneered by Henri Tajfel, a procedure to investigate the minimal conditions required to make people favor their own group. Discrimination between groups can occur just by being assigned to a group (e.g., the ‘green’ or ‘red’ group).

Monetarism. An economic school of thought that posits that changing the total amount of money in an economy (the money supply) is the best way to stabilize the economy.

Money illusion. The tendency to think of income/wealth in terms of the face value (the nominal value; e.g., £1) rather than in terms of its purchasing power (the real value which takes inflation into account).

Myopic loss aversion theory. Described by Benartzi and Thaler to explain the equity premium puzzle; it refers to a short-term view on investments which is characterized by a high sensitivity to losses.

Nash equilibrium. Named after Nobel prize recipient John Nash, it is a concept in game theory which defines the best solution in non-cooperative games involving two or more players. It is the outcome of the game in which changing strategy would not lead to a better pay-off for one player while taking into account the best strategies of other players.

Neoclassical economics (mainstream, traditional). Current dominant approach in economics, which assumes that rational economic agents seek to maximize utility (consumers) or profits (firms), as well as a number of other axioms.

Normative economics. A perspective in economics that focuses on how people *should* behave and what the outcome of public policies *ought* to be; contrary to positive economics, it is value-based and subjective.

Nudge theory (nudge). An aspect of choice architecture that influences behavior in a non-coercive way; a nudge is said to be liberty-preserving and does not involve regulation or bans; it must be easy to opt out of the behavior, if it is not desired.

Opportunity costs. The value of the best foregone alternative when one option is chosen.

Optimization. The most effective use of available resources, choosing the best available option given budget constraints.

Peak-end rule. Experiences are not remembered in the same way; we tend to remember the most intense (peak) moments as well as the concluding moments (e.g., we prefer a longer, cumulatively more painful, dental treatment to a shorter one that contains a higher peak moment of pain).

Positive economics (descriptive economics). A perspective in economics that focuses on how people actually behave and economic facts; contrary to normative economics, it is fact-based and objective.

Praxeology. An old name for the science of human action (what we now call psychology).

Preference purification. The reconstruction of what the individual would have chosen in the absence of reasoning imperfections; the idea is that contaminated revealed preferences need to be ‘purified’ to get at true (latent) preferences.

Preference reversal. A situation in which preferences change between alternatives options; this could be due to a change in context, framing, the method of eliciting the preference or the point in time at which the outcome of the choice will be realized, among other reasons.

Present bias. The tendency to prefer immediate rewards over delayed rewards.

Price elasticity of demand. A measure which indicates how responsive (elastic) demand is to changes in price (i.e., to what extent demand increases/decreases after a price decrease/increase).

Priming. A nonconscious memory effect in which exposure to a stimulus affects how people react to another stimulus. The brain networks are activated by an initial ‘prime’ which then affects subsequent behavior.

Prisoner’s Dilemma. A scenario in which two players have to decide separately whether to cooperate or defect (i.e., ‘rat out’ their partner in crime). The common feature of Prisoner’s Dilemma games is that the ideal outcome is achieved when both players cooperate; however, each player’s dominant strategy is to cheat and, thus, the Nash equilibrium is that both defect.

Procedure invariance. Preferences should be stable irrespective of how they are elicited.

Procedural learning. The nonconscious acquisition of a new skill through repeating actions.

Prominence effect. Prominent options are more likely to be chosen.

Prospect theory. Developed by Kahneman and Tversky in 1979; a theory that describes decision making under risk.

Psychological value. In marketing, the customer-perceived value of a product that often exceeds the functional or monetary value by making the consumer feel better (i.e., subjective utility).

Randomized controlled trial (RCT). A type of experiment in which participants are randomly allocated to either a control or treatment group in order to test the effect of the treatment.

Rationality. In neoclassical economics, rational consumers maximize their utility and rational firms maximize their profit. Rational behavior follows axioms (assumptions), including completeness, among others.

Rational choice theory. A framework for modeling economic behavior; it is assumed that rational agents will choose the best options to maximize their utility, given their constraints.

Reactance theory. A theory which describes that people often do the opposite of what rules and regulations mandate if they feel that their freedom to choose is being curtailed; they do not like being told what to do.

Reciprocal altruism. Doing something for other people with the expectation that this altruistic act will be reciprocated in the future (“you scratch my back, and I will scratch yours”).

Reference dependence. Outcomes are evaluated relative to a reference point; an important aspect of prospect theory.

Reflection effect. Opposite risk preferences for gambles, depending on whether the potential outcome is a gain or loss (e.g., people tend to show risk-seeking behavior to avoid losses but risk-averse behavior to secure gains).

Relative utility. An individual’s well-being relative to that of relevant others; as opposed to absolute utility, which does not imply a comparison with other people.

Repeated games (iterative strategy games). In game theory, a game in which the same base game is repeated over several rounds.

Representativeness heuristic. A mental shortcut which people use when estimating the probability that an event or object belongs to a certain class, by looking at how representative that event/object seems to be of that class – this can lead to base rate neglect.

Revealed preferences. An economic theory which posits that the best way to measure preferences is to observe actual choice behavior; the theory assumes that actual choices (e.g., purchases) reveal latent preferences.

Rhyme as reason. Similar sounds, sights, etc. are encoded more readily; when using words, a rhyme is better remembered and may be seen as more persuasive (this is why commercial forms of communication often use them, e.g., “naughty but nice” – in the court case of O.J. Simpson, “If the glove doesn’t fit, you must acquit” is thought by some to have been decisive in the Not Guilty verdict).

Risk. The probability of an outcome occurring is known.

Risk aversion. The tendency to avoid risks among gambles with the same expected value: risk averse individuals will always prefer the gamble with the lowest level of risk. Sure bets might even be preferred over risky options with a higher expected values.

Salience. An aspect of a stimulus that is prominent or draws attention in some way; people’s attention is drawn to what is novel and seems relevant.

Satisficing. A portmanteau of ‘suffice’ and ‘satisfying’ introduced by Herbert Simon in 1956; it describes the tendency of individuals to make decisions that are not optimal as defined in mathematical terms, but that are good enough to provide a sufficient degree of happiness (i.e., utility).

Say’s law (the law of markets). Described by Jean-Baptiste Say in 1803, which states that supply (or production) creates its own demand.

Scarcity value. Psychological value is higher for goods that are, or seem to be, in short supply.

Sensation transfer. The process in which warm feelings we have about something (e.g., our name) transfers to another object (e.g., the Starbucks cup).

Social comparison. Proposed by Leon Festinger in 1954, people's tendency to compare themselves to their peers in order to be able to evaluate themselves better.

Social influence. Refers to changes in attitudes, beliefs, opinions, values and behavior as a result of exposure to other people's attitudes, beliefs, opinions, values and behavior.

Social norms. The accepted (though unwritten and usually not articulated) rules of behavior in a society (that may change over time); we are heavily influenced by what we think other people expect of us.

Social preferences (interdependent preferences, other-regarding preferences). Individuals who exhibit social preferences take the utility/payoff of other people into account in their own decision-making process (e.g., altruism, fairness, envy, reciprocity).

Social proof (informational social influence). An individual's tendency to seek information and reassurance from other people (a type of conformity); we look to others for guidance on social behavior.

Spiteful behavior. In game theory, spiteful players are willing to forego a benefit in order to punish another player.

Status quo bias. A preference for the familiar, current state of affairs.

Sunk costs. A cost that has already been incurred and cannot be recovered; contrary to prospective costs which have not yet been incurred and will depend on the choice made.

Supply (law of supply). A law described in microeconomics which states that as the price of a good (or service) increases, the quantity that firms are willing to supply of that good will increase and vice versa (all other things being equal).

Supposedly irrelevant factors (SIFs). Term coined by Richard Thaler which refers to factors that are supposedly irrelevant in the thinking of a rational person – however, in reality, these factors do influence decisions.

System 1 (implicit/procedural). One of the two kinds of information processing described in dual-processing theory. At the moment of execution, all cognition and behaviors are controlled

by System 1, which is reflexive, fast, automatic, biased, intuitive, emotional, habitual, nonconscious, and prepotent. System 1 is said to be responsible for the biases and errors that define behavioral economics.

System 2 (explicit/declarative). One of the two kinds of information processing described in dual-processing theory. System 2 is reflective, slow, controlled, effortful and can be conscious. It is thought that System 2 operates only when there is a definite choice to be made and System 1 cannot arrive at a solution. System 2 is usually thought to have the capacity to be more rational than System 1.

Systematic processing. The assumption that attitude change is mediated by the message recipient's detailed processing of the (informational) arguments.

Transaction cost. The costs that are incurred when buying or selling a good or service.

Uncertainty. The probability of the outcome occurring is not known.

Utilitarianism. A doctrine established by Jeremy Bentham that advances the idea that the greatest happiness of the greatest number should be the foundation of morals and legislation; it is based on the assumption that our decision making and behaviors are motivated by the pursuit of pleasure (utility) and the avoidance of pain and displeasure (disutility).

Utility. The enjoyment, benefit or value that a consumer obtains from a good, service, etc.

Utility function. A utility function orders and measures preferences over a set of goods and services.

Veblen good. A good for which demand increases as price increases, which is a violation of the law of demand (see Demand); Veblen goods are usually positional goods or status symbols.

von Neumann-Morgenstern utility theorem. A theorem in decision theory which forms the basis for expected utility theory; it shows that rational decision makers who have to choose between several risky options (i.e., with known probabilities) will maximize the expected value of these choices.

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INDEX

- ABBA 18–19
A/B testing (split testing) 192–193
advertising 179–185, 192, 195–196, 199, 206
affect 26, 141–142, 163–164, 207; *see also* emotion
affect heuristic 103–104
affective forecasting (hedonic forecasting) 175, 207–208
Allais paradox 68, 76, 78–79
ambiguity aversion (uncertainty aversion) 107
American Economic Association 9, 55
anchoring 95, 100, 102–103, 201, 205
anchoring and adjustment heuristic 95, 100, 102–103
animal spirits 54, 141; *see also* Keynes, John Maynard
Ariely, Dan 4, 13–16, 38, 77, 102, 123, 203,
Asian disease problem 107–108; *see also* framing
attitudes (and beliefs) 121, 147, 152, 191
attraction effect 204–205
autokinetic effect (autokinesis) 136
availability heuristic 95–97
axioms 4, 31, 67, 73

Bank of England 17, 61, 123
base rate fallacy (base rate neglect, base rate bias) 98
bat and ball problem 12, 70
Bayesian updating (Bayesian reasoning/inference) 75–76, 98
behavior change 152–154, 156, 159–165, 199; *see also* Nudge
Behavioural Insights Team (‘Nudge unit’) 2, 56, 155; *see also* Nudge
benign paternalism 172
Bentham, Jeremy 42, 44–45
Bernanke, Ben 16
biases (cognitive biases) 6, 10, 94–95, 171; base rate 98; *see also* base

- rate fallacy; confirmation 97;
- extreme aversion 205; present 81, 151, 166; status quo 91, 111–112
- Big-5 personality traits 144–145; *see also* personality
- bounded rationality 81–82
- Brexit 210
- Brooks, David 15
- Brown, Gordon 17
- buyer's remorse (buyer's regret) 198–199
- butterfly effect, the 182
- Camerer, Colin 5, 12, 20–21, 86, 126, 159
- Cameron, David 25
- Carlyle, Thomas 34; *see also* dismal science, the
- choice architecture 121, 152, 154–156, 158–159, 165–166, 170, 197
- classical economics 30, 33–49, 60
- cognitive dissonance 147, 152, 165, 192
- cognitive response model 191–192
- commitment 164, 176; device 153, 164
- common prior assumption 75
- comparative cost advantage 42–43, 47, 49
- compatibility effect 80
- completeness (axiom of order) 68
- compliance 135, 165
- compromise effect 204–205
- conditioning: classical (Pavlovian) 181; evaluative 181, 192
- confirmation bias 97
- conjunction fallacy (the Linda problem) 99
- consequentialism 44–45
- consistency 152
- conspicuous consumption 51, 188; *see also* Veblen goods
- conversion 135, 165
- cooperation 120–126, 129, 136; in economic games 125
- crowding-out 160–161, 200
- Cuba, Republic of 30, 50
- Cummings, Dominic 210; *see also* Brexit
- customer journey, the 196–198
- decision utility 208–209
- decoy pricing effect (asymmetrically dominated choice, asymmetric dominance effect) 197, 202–205; *see also* money
- defaults 153, 158, 162, 165–166
- demand (law of demand) 39, 46, 53–54, 62–64, 84, 188
- Dickens, Charles 151
- dilution effect 97
- discounting (delay discounting, time discounting) 81
- dismal science, the 34–35, 45, 48
- dominant strategy 131–132
- dual-processing theory 114, 117
- Dylan, Bob 55
- Easterlin, Richard 174–175; *see also* subjective well-being
- Einstein, Albert 101, 168, 200
- efficient market hypothesis 15
- ego 165
- Ellsberg paradox 107
- emotion 36–38, 113, 141–144, 163–164, 192, 206; *see also* buyer's remorse (buyer's regret), mood
- empathy gap 143–144
- endowment effect (divestiture aversion) 90–91, 110–111, 140
- equity premium puzzle 106

- evaluation heuristics 95
- evaluative conditioning 181, 192
- evolution 120, 124–125, 137, 184, 193–194, 198, 199; commerce 194; monkey studies 137–140; tit for tat strategy 125
- expected utility theory 71–79, 86, 94–95, 104–105, 199
- expected value (expectation) 72–74, 76, 105–106
- experienced utility 208–209
- experimental economics 83, 126, 128, 132
- exponential discounting 81
- externalities 24, 171–172
- extremeness aversion (extreme aversion bias) 205
- Eysenck, Hans 145
- Facebook 67, 174, 183–185, 209–211; *see also* social media
- Federal Reserve of the United States 15
- films/TV: Mad Men 179, 183, 212; Margin Call 16; The Big Short 16; Trading Places 38; Wall Street 40
- financial crisis 2007/2008 (financial crash, financial collapse) 1, 7, 14–18, 26, 40, 53, 61, 95, 106
- Fisher, Irving 16–17, 91
- Fitoussi, Jean-Paul 25
- focalism (focusing illusion) 207
- framing 107–110, 150, 187–188, 202
- framing effect 107–108
- Frank, Robert 208
- free market 15, 34, 49, 82–84
- free will 116–117
- Freud, Anna 180
- Freud, Sigmund (Freudian) 55, 114, 150, 161, 179–180
- Friedman, Milton 49, 54, 63–64, 78, 82–83, 87, 115, 155
- Furnham, Adrian 201
- Galbraith, John Kenneth 17, 47, 49, 51–55, 84, 89, 167, 209
- gambler's fallacy (Monte Carlo fallacy) 100
- game theory (economic games) 73, 125–133; dictator 128–130, 133, 148; prisoner's dilemma 125, 130–133, 145; public goods 125–127; ultimatum 128, 133, 148
- Great Moderation 16
- Greenspan, Alan 15
- groups, social: identification 133–134; in/out group 134; in-group love 134; out-group hate 134
- Gross Domestic/National Product 23–24, 39
- gut feeling 142–143
- Hayek, Friedrich 50
- hedonic adaptation (habituation, hedonic treadmill) 175, 205–208
- heuristics 85, 94–95, 103–104, 109, 112–117; affect 103–104; availability 96–97; anchoring and adjustment 95, 100–102; representativeness 95, 97–100
- homo economicus (ECON) 6, 59, 60, 65, 69, 71, 79, 81, 87, 89, 94, 116, 180, 182
- homo psychologicus (HUMAN) 6, 89, 169
- hot-cold empathy gap 143–144
- Hume, David 8, 47, 50, 151
- hyperbolic discounting 81

- illusory correlations 97
- impartial spectator 37–38, 41, 119, 130,
- inequality aversion (inequity aversion) 129, 148
- insensitivity to sample size 100–101
- intertemporal choice 80–81
- intrinsic motivation 147, 160–161, 200
- invisible hand 13, 35, 38–40, 46, 49, 52–53, 84
- Jefferson, Thomas (Declaration of Independence, USA) 173
- Jevons, William Stanley 48
- judgment heuristics 95
- Kahneman, Daniel 1, 8, 11–13, 27, 57, 83, 85–86, 90–93, 95–96, 98–102, 107–109, 111, 113, 117, 122–123, 140, 142, 163, 171, 206–208
- Kennedy, Robert 24
- Keynes, John Maynard 30, 46, 53–54, 60, 77, 141
- King, Mervyn 17, 19, 61, 106, 123
- latent inhibition 162; *see also* learned irrelevance
- law of diminishing marginal utility 48, 66–67, 71
- law of diminishing returns 42, 63
- learned irrelevance 162; *see also* latent inhibition
- libertarian paternalism 158–159, 167; *see also* Nudge
- life-cycle model (theory of life-cycle labor supply) 20–21; *see also* New York taxi drivers
- Loewenstein, George 4–5, 8, 12, 20, 80, 86, 102, 144, 161, 205
- loss aversion 70, 89–92, 110–111, 140, 153, 160, 164, 193, 202, 205
- macroeconomics 62
- mainstream economics 1–2, 4–14, 16–23, 29–31; *see also* neoclassical economics
- Malthus, Thomas Robert 44–46
- marginalism 42, 65–66
- marginal utility 48–49, 66–67, 71
- market equilibrium 51, 62–64
- Marshall, Alfred 48, 59–65, 82
- Marx, Karl 14, 30, 34, 50, 57
- matching law 70
- McDougall, William 56
- Menger, Carl 48
- mental accounting 92–94
- mere exposure effect (familiarity principle) 183–184, 192
- microeconomics 62
- Mill, James 47
- Mill, John Stuart 47–48, 67
- Miller, Geoffrey 194; *see also* evolution
- MINDSPACE 159–165, 176;
 - affect 163–164; commitment 164; defaults 162; ego 165;
 - incentives 160–161; messenger 159–160; norms 161–162;
 - priming 163; salience 162–163
- minimal group paradigm 134
- misbehavior 2, 4, 9–12, 86, 117; *see also* Thaler, Richard
- money 18–20, 92–93
- money illusion 91–92, 140
- money printing 54
- monetarism 54
- monkeynomics 139
- mood 78, 113, 117, 120, 140–142, 163–164
- Morgenstern, Oskar 73, 125

- motivation (intrinsic–extrinsic) 43, 113, 147, 160–161, 179–180, 184, 198, 200; *see also* crowding-out
- myopic loss aversion theory 92
- Nash equilibrium 127–128, 132
- National Health Service (NHS) 31, 49
- neoclassical economics (mainstream, traditional) 30–33, 50–51, 59–61, 69, 77–78
- New York taxi drivers 20–23, 47, 92; *see also* life-cycle model
- Nobel Prize 1, 9, 14, 25, 27, 55, 83, 95, 109, 128
- normative economics 6, 32, 60, 66, 86, 110
- Nudge theory (nudge, nudge interventions) 44, 56, 136, 149–159; BASIC model 156; critique 166–171; definition 152; philosophy 150–151, 155, 166; SuperReasoner 169–170; *see also* randomized controlled trials, MINDSPACE
- Obama, Barack 2
- Ogilvy, David 151, 180, 182
- opportunity costs 22, 43, 47, 49, 70
- optimization (optimizing behavior) 10, 32, 60, 186
- Organisation for Economic Co-operation and Development (OECD) 25–26
- personality 38, 75, 117, 120–121, 144–148; Big-5 144–145; commerce 185, 193; employment 146; measurement 144–145
- persuasion, techniques of 191–193
- Piqueras-Fiszman, Betina 198
- political economy 29, 33, 47, 56, 86–87
- politics 48, 50, 52, 96
- Popper, Karl 50, 189; clouds and clocks 189
- positive economics (descriptive economics) 6
- praxeology 190
- preference: latent 65, 166–169; revealed 36, 60, 65, 151–152, 167–169; reversal 78–81; purification 166–168
- present bias 81, 151, 166
- price elasticity of demand 62–63
- priming 121–123, 163
- prisoner's dilemma 125, 130–133, 145; *see also* game theory
- procedural learning 142–143
- procedure invariance 80, 90
- prominence effect 108–109
- prospect theory 86, 89, 109–111, 117
- psychological value 186–191, 197, 212; *see also* utility
- psychology: behavioral 70; cognitive 85, 117; personality 144–147; social 3, 36, 85, 119–121, 134–135, 137, 147, 162–163, 165
- quantitative easing 54; *see also* money printing
- randomized controlled trial (RCT) 157–158, 193
- rational choice theory 36, 67–68
- rationality: bounded 81–82; deviations from 104–107; neoclassical definition 69–70
- reactance theory 199–200
- reciprocal altruism 124
- reference dependence 111, 140, 173

- reflection effect 110
- relative utility 173
- repeated games 125–126, 128
- representativeness heuristic 97–100
- revealed preferences 36, 65, 151, 167–169, 173
- Ricardo, David 34, 42–44, 47, 54, 60
- risk 72–74, 140
- risk aversion 31, 74, 105–106, 140, 198
- rhyme as reason 138
- salience 117, 162–163, 196
- Sarkozy, Nicolas 25
- satisficing 82
- Say, Jean-Baptiste 46–47, 54
- Say's law (the law of markets) 46–47, 54
- scarcity value 201
- Sen, Amartya 25
- sensation transfer 197
- Simon, Herbert 81–82, 94
- Shiller, Robert 14–15
- Smith, Adam 13, 33–42, 45–55, 90, 119, 122, 130, 132, 140, 143, 147
- Smith, Vernon 27, 83
- social comparison 137, 165, 171–176, 190, 207–208
- social influence 121, 135, 144
- social media 176, 183–184, 209–210; *see also* Facebook
- social norms 119, 133, 135–138; compliance 135, 165; obedience 135
- social preferences (interdependent preferences, other-regarding preferences) 31, 36, 148
- social proof (informational social influence) 162, 184
- Soros, George 142
- Spence, Charles 198
- spiteful behavior 129, 139
- status quo bias 91, 111–112
- Stiglitz, Joseph 25
- stock market crash of 1929 1, 16–17
- subjective well-being 24–6, 172–175; affect 26, 141–142, 163–164, 207; eudaimonia 24, 26; flourishing 26, 176; life satisfaction 24
- Sugden, Robert 166–167, 169–170
- Summers, Larry 14
- sunk costs 69–70
- Sunstein, Cass 44, 149, 150, 152, 154, 158, 167–169, 172
- supply (law of supply) 39, 53, 62–64, 84
- supposedly irrelevant factors (SIFs) 9–11, 80, 117, 186, 201
- Sutherland, Rory 181–182, 189, 199
- system 1 (implicit/procedural) 113–117, 171, 183, 195
- system 2 (explicit/declarative) 113–117, 171, 183, 195
- systematic processing 191
- Thaler, Richard 1, 4, 7, 9–11, 14, 16, 20, 36, 55, 78, 80, 86, 90–93, 109–10, 117, 146, 149–150, 152, 154, 158, 167–169, 186, 194–195, 201
- transaction cost 112, 194–195, 204
- Trump, Donald 74, 210
- trust 35, 122–124, 126, 133, 182, 199
- Tversky, Amos 11, 57, 78, 80, 85–86, 90, 92–93, 95–96, 98–102, 107–109, 111, 117, 140
- uncertainty 17, 72, 74, 80, 82, 105–106, 109, 112, 117, 136, 199

- utilitarianism 44
- utility 6, 19–23, 31–33, 36, 40, 45, 48, 60–61, 64–79, 172–174, 186–187, 208
- utility function 36, 130
- value: objective (economic) 186–188, 198; subjective (psychological) 186–190, 198
- Veblen good 188, 194, 205
- Veblen, Thorstein 30, 51, 54, 187
- virtue signaling 21
- von Mises, Ludwig 189
- von Neumann, John 73, 125
- von Neumann-Morgenstern utility theorem 73–74
- Walras, Leon 48
- Warhol, Andy 188–189
- warm glow 21, 60, 120, 130, 165
- Wilde, Oscar 150
- Zajonc, Robert 183; *see also* mere exposure effect
- Zimbardo, Philip 133–134; Stanford prison experiment, the 133
- Zuckerberg, Mark 209–210



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