

Chapter 3

From Rational Choice to Behavioural Economics

Theoretical Foundations, Empirical Findings and Legal Implications

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Abstract This article considers how individual decision making is explained in rational choice, on the one hand, and in behavioural economics, on the other hand, and analyses the corresponding implications for the maximization of individual and social utility. Special emphasis is placed on whether and how the law can and shall positively influence non-utility-maximizing behaviour resulting from cognitive heuristics and biases.

3.1 Introduction

The value maximization premise of neo-classical rational choice theory assumes that, when confronted with various alternative courses of action, the rational and self-interested *homo oeconomicus* will choose the alternative that *maximises his or her individual utility*. Within welfare economics, welfare is used as a measure for evaluating social conditions.

Empirical knowledge obtained by social psychologists over the past thirty years from experiments and field studies partly refute rational choice theory. This knowledge has also been profitably used within economic theory under the heading of *behavioural economics*. In particular, the image of the rational, utility-maximising *homo oeconomicus* must be revised, since people often use *cognitive heuristics*, which may result in systematic *cognitive biases*. Accordingly, they make decisions that neither serve their own interests nor maximise social welfare. These findings

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have undermined the traditional explanatory model for economics. As Richard A. Posner concisely puts it:

What is called “behavioral economics” [...] has undermined the economic model of man as a rational maximizer of his self-interest and helped to expose the rampant exploitation by business of consumer psychology. Businesses know, and economists are learning, that consumers are easily manipulated by sellers into making bad choices—choices they would never make if they knew better [...].¹

In this regard, the question arises as to the extent to which the law can and shall react to these new insights from behavioural research.

This paper discusses, in a first step, how individuals make decisions according to rational choice theory and the criteria by which welfare economics evaluates social conditions (3.2). It will then critique rational choice theory from the perspective of behavioural economics, commenting on various deviations from the assumptions underlying rational choice theory (3.3). Finally, the results will be summarised in a concluding paragraph (3.4).

3.2 Rational Choice Theory

According to the paradigm of neo-classical micro-economic theory, human conduct is understood as the *rational choice* between various alternatives under conditions of *scarcity*. The micro-economic approach is based on the economic paradigm. The core element of this paradigm is *homo oeconomicus*, who acts rationally under conditions of scarcity. The unit of analysis is the *individual (methodological individualism)*. This individual disposes of limited resources and is unable to satisfy all of his or her needs, but must make an optimum choice amongst various alternatives. In principle, all human conduct—including interpersonal relations—is governed by the law of scarcity and thus represents a potential field for the application of economic theory. Thus, *economics* as a science refers to a *method* rather than to a specific subject. Applying the economic approach to a “non-economic” field—such as, for example, by Gary S. Becker to the family, crime and the law—is at times dismissed as “economic imperialism”.²

3.2.1 Individual Decisions

Under the rational choice model, the individual’s decision-making position can essentially be accounted for with reference to two factors: preferences and restrictions. Preferences refer to people’s internal motives, and restrictions to their external incentives. The behavioural economic model attempts to account for changes in

¹ Posner 2013, p. 212.

² Mathis 2009, p. 21 et seqq.

behaviour as a reaction to external incentives, and hence to changes in restrictions. Whilst preferences are an important factor in accounting for human conduct, they are assumed to be unalterable in the short term and are thus both incapable of explaining changes in short-term behaviour and impracticable as an instrument for regulatory policy.

An individual's values, which have developed through the process of socialisation, manifest themselves as *preferences* in the utility function. According to this approach, the individual assesses the available options (i.e. weighs up advantages and disadvantages in the form of benefits and costs) of each alternative and chooses the alternative with the highest gain, assuming identical restrictions. *Restrictions* limit the individual's room for manoeuvre and thus all possible courses of action available to him or her. In the textbook case of consumer decisions by a private household, relevant restrictions are the disposable income, on the one hand, and the relative prices of consumer goods, on the other hand. Further restrictions include time or legal norms.

The restrictions that apply to the conduct of individuals are normally relatively easy to identify. By contrast, it is difficult to determine individuals' preferences. Leaving aside direct questioning (with all associated difficulties), preferences can, as a rule, only be determined indirectly by making inferences regarding individuals' order of preference via observing both behaviour and restrictions. Moreover, preferences are generally more stable than restrictions and change relatively slowly, if at all.³ *It is therefore assumed that the conduct of individuals can be systematically influenced by changing incentives.* By the same token, it is presumed that a similar systematic influencing of preferences will be difficult, at least in the short term. For example, traffic volumes may be reduced more effectively and more quickly by increasing fuel prices than by calls to refrain from using a car.

The rational choice theory intentionally reduces people to a few individual characteristics, since a key feature of economic modelling is the focus on important aspects whilst disregarding less important matters. Human decision-making processes are an extremely complicated phenomenon and are influenced by an unwieldy large number of factors. In order to be able to engage with this phenomenon scientifically, it is necessary to *reduce complexity*.⁴ Indeed, the aim of the economic approach is not to explain the actual behaviour of any given person; such matters must be left to psychologists. Economists are rather interested in the behaviour of large groups of individuals, so called "aggregates", such as, for example, the behaviour of consumers or businesses. They look for *patterns* within the behaviour of the group as a whole, or at least the majority of the relevant group.

In his renowned paper on "The Methodology of Positive Economics" (1953), Milton Friedman defends the neo-classical theory against the criticism that it is reductionist and based on false assumptions.⁵ According to Friedman, the underlying assumptions do not constitute actual assertions relating to reality, but are rather "as

³ Kirchgässner 1988, p. 111 et seqq.

⁴ Homann and Suchanek 2000, p. 392.

⁵ See also below, sect. 3.3.

if" assertions. Thus, maximising utility does not mean that any given individual actually seeks to do so, but rather that the result of his or her behaviour is the same as it would have been had he or she acted in this way.⁶ A theory is a *forecasting tool*, and not a mirror of reality. Thus, the effectiveness of a theory is not to be judged on the basis of how realistic its premises are; on the contrary, its effectiveness is to be ascertained by testing how practical a given hypothesis—devised with the assistance of the theory—in reality is. Indeed, as a general rule, the more significant a theory is, the more unrealistic its assumptions will be:

Truly important and significant hypotheses will be found to have “assumptions” that are wildly inaccurate descriptive representations of reality, and, in general, the more significant the theory, the more unrealistic the assumptions [...].⁷

Friedman is interested, first and foremost, in creating a usable tool for economists: hypotheses should provide useful forecasts on the basis of as little information as possible.⁸ Richard A. Posner adopts a similar stance to Friedman in stressing the explanatory and predictive power of economic theory. However, the premises as such need not be accurate:

An important test of a theory is its ability to explain reality. If it does a lousy job, the reason may be that its assumptions are insufficiently realistic; but we need not try to evaluate the assumptions directly in order to evaluate it. Judged by the test of explanatory power, economic theory is a significant (although only partial) success. [...] Another test of scientific theory is its predictive power, and here too economics has had its share of success, most dramatically in recent years.⁹

Drawing on a comparison with natural sciences—which acts as a model for economic theory—Posner shows that theories may still be very useful, even if they are based on partially false assumptions:

Newton’s law of falling bodies is unrealistic in its basic assumption that bodies fall in a vacuum, but it is still a useful theory because it predicts with reasonable accuracy the behavior of a wide variety of falling bodies in the real world.¹⁰

In objection to this *instrumentalism*, it may be countered that “explaining” means more than simply “forecasting”. Friedman’s methodology does not explain reality or expand knowledge. Such theories do not result in any new knowledge regarding the structural interrelations between situations.¹¹ As Michael Scriven aptly puts it:

[T]here certainly seem to be occasions when we can predict some phenomenon with the greatest success, but cannot provide any explanation of it. For example, we may discover that whenever cows lie down in the open fields by day, it always rains within a few hours. We are in an excellent position for prediction, but we could scarcely offer the earlier event as an explanation of the latter. It appears that explanation requires something “more than” prediction; and my suggestion would be that, whereas an understanding of a phenomenon

⁶ Frank 1976, p. 19.

⁷ Friedman 1953, p. 14.

⁸ Hotz 1982, p. 304.

⁹ Posner 1998, p. 18.

¹⁰ Posner 1998, p. 18.

¹¹ See Pheby 1988, p. 83.

often enables us to forecast it, the ability to forecast it does not constitute an understanding of a phenomenon.¹²

It may also be argued that businesses competing with one another have no alternative than to maximise profit, as they would otherwise go bankrupt and be excluded from the market.¹³ When viewed in this sense, the logic of the market has already been instilled into *homo oeconomicus* and any other behaviour will be eliminated through the naturally selective process of competition:

[It] must be noted that Friedman shares Smith's optimistic view of the market. However, this assumes that businesses and families can make decisions about the future—even in a world full of uncertainty—which are appropriate for the situation often enough. It also implies that, owing to competition, there is only a small likelihood that the indolent, the foolish, the inept—but also the unlucky and the weak—will perform a decision making function over the long term.¹⁴

This view may be countered by objecting that entrepreneurs and their advisers have absorbed economic theory during their studies, with the result that businesses operate according to the rules of economic theory, which in turn prove to be true as a self-fulfilling prophecy.

3.2.2 Social Decisions

On a social level, welfare economics deals with the maximisation of welfare through the efficient allocation of resources. Efficiency is generally defined as *Pareto efficiency* or *Kaldor-Hicks efficiency*.¹⁵

A particular state will be regarded as *Pareto-optimal* where it is impossible to improve the situation of an individual without worsening the situation of another individual. The Pareto principle is drawn from the model of the free market. Assuming that individual economic operators have freedom of choice and are free to act, each market participant is free to conclude market transactions, or to decide not to do so. This freedom guarantees that every market transaction will represent an improvement in Pareto efficiency. The law, by contrast, is *mandatory in nature*. This means that the concept of Pareto efficiency needs to be adjusted in order for it to be of use for the law.¹⁶ Nicholas Kaldor and John R. Hicks transformed the Pareto criterion into an instrument that can be applied to the law. The Kaldor-Hicks test stipulates that a change will involve an improvement whenever the winners consider their gains to be greater than the losers consider their losses to be.¹⁷

¹² Scriven 1962, p. 176 et seqq.

¹³ Homann and Suchanek 2000, p. 422.

¹⁴ Meyer 1978, p. 41. On Adam Smith's market optimism see Mathis 2009, p. 108 et seqq.

¹⁵ On the efficiency criteria and their philosophical foundations, see Mathis 2009; see also Eidenmüller 2005.

¹⁶ Fletcher 1996, p. 158.

¹⁷ Baumol 1972, p. 402.

The *Kaldor-Hicks criterion* differs from the Pareto principle in that it not only envisages alternative decisions which leave nobody worse off, but also decisions that are beneficial for some but detrimental for others. Whilst the winners must *hypothetically* be able to compensate the losers, an actual compensation payment is not mandatory. The Kaldor-Hicks test thus denotes a *potential* rather than an actual increase in Pareto efficiency.¹⁸

The concept of Kaldor-Hicks efficiency is widespread within welfare economics. It is this concept that underlies the *cost-benefit analysis* used to measure the net social benefit of investments. For example, a new railway line will be assessed by comparing economic costs discounted to the present day (e.g. construction and environmental costs) with economic benefits discounted to the present day (e.g. additional profits for the railway company and improved passenger comfort). Cost-benefit analyses may be used in the legal domain in order to assess regulations. However, there are limits to this method of evaluation: alongside the technical difficulties in measuring costs and benefits, the cost-benefit analysis is criticised because it disregards the *problem of distributing* gains and losses associated with projects and regulations.¹⁹

3.3 Behavioural Economics

The traditional rational choice approach and its basic assumptions are being challenged by more recent approaches to research, which may be classified together under the term behavioural economics.²⁰ The goal of this line of research is to critically analyse the psychological foundations of economics and to provide a more realistic account of them.²¹ The aim is to increase the explanatory power of the economic model by providing a better psychological foundation.²²

The first fundamental criticism is directed against the *assumption of rational behaviour*. As early as the 1970s, Herbert A. Simon objected to this concept of *perfect rationality*:

There can no longer be any doubt that the micro assumptions of the theory—the assumptions of perfect rationality—are contrary to fact. It is not a question of approximation; they do not even remotely describe the processes that human beings use for making decisions in complex situations.²³

A further milestone was achieved by Daniel Kahneman and Amos Tversky's *Prospect Theory* (1979) which, building on Simon's work, further relativised the

¹⁸ See contra Mathis 2009, p. 47 et seqq.

¹⁹ Mathis 2007b, p. 1545.

²⁰ For an overview see Mathis 2007a, p. 118–120.

²¹ This also makes it possible to refute more effectively the objection that economists frequently dedicate their efforts to constructing abstract models in their ivory towers.

²² See e.g. the volume by Camerer, Loewenstein and Rabin 2003; a good overview is also provided by Kahneman 2011.

²³ Simon 1979, p. 510.

assumption of rationality. Their theory is based on empirical observation and describes how individuals perceive their wins and losses. Kahneman and Tversky found out that most people are *loss averse*. Thus, their negative perception of, for example, a fine of CHF 1000.00 will be more intense than their positive assessment of an equivalent gain. They also found out that people make probability assessments on the basis of particular indicators (known as *anchors*), which are often arbitrary.²⁴

In his book “Thinking, Fast and Slow” (2011), Kahneman differentiates between two systems of human thinking:²⁵

System 1 operates automatically and quickly, with little or no effort and no sense of voluntary control.²⁶

System 1 is an intuitive system of thought, in which judgments are made quickly and unwittingly.

System 2 allocates attention to the effortful mental activities that demand it, including complex computations. The operations of System 2 are often associated with the subjective experience of agency, choice, and concentration.²⁷

System 2 is a rational system of thought, in which judgments are made on the basis of thorough consideration, which requires a certain amount of time.

Each way of thinking has its own benefits and drawbacks: the rational approach of *System 2* enables human beings to analyse a problem thoroughly and to make well-considered decisions. However, this requires time and effort. *System 1* has the advantage of requiring hardly any time and being practically effortless. This system relies on a form of cognitive rules of thumb, known as *heuristics*, which are fundamentally useful, if not even necessary, in order to resolve complex everyday situations without dedicating a significant amount of time to the matter. However, in some cases its application leads to significant *systematic biases*.²⁸ In the same way as optical illusions may result in reality being misread, so can mental heuristics result in incorrect evaluations.²⁹

Behavioural economics also calls into question the *theory of self-interest*. In reality, most people do not always act according to their best self-interest. There are indications that a consideration of fairness and mutual benefit are important within bilateral negotiations and market operation. More recent behavioural economics research has attempted to explain how social, economic and legal conditions influence the tendency to engage in reciprocal conduct (i.e. providing mutual satisfaction).³⁰

²⁴ See overall Kahneman and Tversky 1979, p. 263–292.

²⁵ In their paper published in 1974 entitled “Judgement under Uncertainty: Heuristics and Biases”, Amos Tversky and Daniel Kahneman demonstrated that people rely on mental heuristics in complex decision-making scenarios (this paper is also reproduced in the annex to the book “Thinking, Fast and Slow”).

²⁶ Kahneman 2011, p. 20.

²⁷ Kahneman 2011, p. 21.

²⁸ Tversky and Kahneman 1974, p. 1124.

²⁹ Guthrie, Rachlinski and Wistrich 2001, p. 780.

³⁰ See e.g. Fehr and Fischbacher 2002, C1-C33; Gintis, Bowles, Boyd and Fehr 2005.

Finally, the neo-classical model of human behaviour implicitly presupposes the highly unrealistic assumption of unbounded *willpower*. Most economists see behaviour as a simple decision-making process in which a choice is made between different alternatives. Implementing the decision is either completely disregarded, or it is assumed to run smoothly. In actual fact, however, people normally have to motivate themselves in order to achieve a desired form of behaviour. There might be conflicts between two or more opposing motives and people may be tempted to seek short-term gains at the cost of long-term goals. For example, we may be unable to give up smoking contrary to our better judgment.³¹

3.3.1 Individual Decisions

On an individual level, behavioural economics studies human conduct through empirically investigating its implications for economic processes. In order to do this, data is usually generated artificially in laboratory experiments, though real-life data is also increasingly being used. Particular focus is placed on the cognitive heuristics and biases that contrast with *homo oeconomicus*. The following paragraphs will explain briefly the most important heuristics and their related biases.

Availability Bias The *subjectively perceived likelihood* of an event will be higher, the easier and quicker a person is able to imagine or remember such an event.³²

[P]eople might resolve a question of probability not by investigating statistics, but by asking whether a relevant incident comes easily to mind.³³

Thus, it is possible that a judgment regarding the likelihood of a traffic accident is dependent upon how vividly one can imagine such an event. A person who has recently witnessed a traffic accident will generally assess the likelihood of traffic accidents to be significantly higher than a person who has not witnessed a traffic accident in a long time.³⁴ In addition to the *individual cognitive availability*, the *general cognitive availability* has to be considered as well. The media play a central role in this respect. The fact that deaths from car accidents are more widely reported than, say, deaths from cancer, promotes the idea that more people die from the consequences of traffic accidents than from cancer. In actual fact, however, the opposite is true.³⁵

Furthermore, it is also necessary to consider *illusory correlations*. Since people look out for *positive contingencies*, they overestimate the frequency of the general occurrence of events. For example, there is a widespread belief that there is a correlation between consuming drugs and committing crimes. By the same token, *negative contingencies* are often hardly taken into account. A person may take drugs

³¹ See Loewenstein 2000, p. 51–76.

³² Tversky and Kahneman 1974, p. 1127.

³³ Jolls 2009, p. 77.

³⁴ Jungermann, Pfister and Fischer 2010, p. 173.

³⁵ Jungermann, Pfister and Fischer 2010, p. 174.

without ever committing a crime, or may commit a crime without ever having taken drugs.³⁶

Hindsight Bias According to popular folk wisdom, “hindsight is always 20/20”. Indeed, many events—especially those with a tragic outcome—appear to be foreseeable *after* the fact. Baruch Fischhoff was one of the first to study this phenomenon, which subsequently came to be known as *hindsight bias*. He asked how knowledge of the outcome of a course of events affects its *ex post* assessment. His starting hypothesis of a retrospective overestimation of the likelihood of an event has been substantiated in various experiments.³⁷ Knowledge of the outcome of a course of events influences those making *ex post* judgments by leading them to believe that people should have been able to anticipate future events more accurately than was actually possible. This bias is also known as the *knew-it-all-along effect* or as *creeping determinism*.³⁸

Numerous subsequent studies have since independently confirmed that judgments made in retrospect tend to overestimate the foreseeability of events.³⁹ Following Fischhoff, Jeffrey J. Rachlinski elaborated on the hindsight bias: Rachlinski argues that people feel the urge to reconcile a particular outcome of a course of events with its respective causes—both of which are *ex ante* unknown—in a *coherent whole*. This has the effect that information that appears to be particularly relevant *ex post* is regarded as particularly relevant *ex ante*. By the same token, information pointing to an alternative course of events is disregarded.⁴⁰

According to Rachlinski, this cognitive error is enhanced by *motivational factors*: many people seek *stability* and *foreseeability*. Moreover, since the foreseeability of an unfortunate event implies its avoidability, hindsight bias may have an extraordinary reassuring effect, as it makes uncontrollable events appear to be controllable.⁴¹ Even if an event is regarded as singular and thus utterly unforeseeable, it is more agreeable to ascribe the event to the normal order of things, thereby rendering the future—allegedly—controllable.

Anchoring Effect The *anchoring* or *reference point* effect postulates that people frequently make probability judgments intuitively or with reference to *anchored points of view* that are often entirely arbitrary.⁴² The anchoring effect may result both in inaccurate numerical estimates as well as biased memories. In a study by Kahneman and Tversky, students were asked to estimate the proportion of African UN member states. Before the students gave their estimates, the two groups of test participants span a wheel of fortune, which stopped—“by chance”—on 65 for group one and on 10 for group two. In group one, the students on average estimated that African states made up 45% of UN members, whilst in group two, the estimated

³⁶ Jungermann, Pfister and Fischer 2010, p. 174.

³⁷ Fischhoff 1975, p. 292.

³⁸ Fischhoff 1975, p. 288.

³⁹ See Christensen-Szalanski and Fobian-Willham 1991.

⁴⁰ Rachlinski 2000, p. 97.

⁴¹ Rachlinski 2000, p. 97 et seqq.

⁴² Tversky and Kahneman 1974, p. 1128; Jungermann, Pfister and Fischer 2010, p. 174 et seqq.

figure averaged 25 %. The entirely arbitrary figure provided by the wheel of chance had an influence on the participants' estimates—in other words, it served as an *anchor*.⁴³ Even if people acknowledge the invalidity of an arbitrary anchor, it nonetheless operates as a starting point for subsequent estimates. People simply adjust either upwards or downwards from it.⁴⁴

The anchor effect can also lead to biased memories, as the following example illustrates: a test participant is asked to estimate the length of the river Rhine. Since the person does not know the precise length, she guesses it to be 1050 km. A few weeks later, the test participant is informed of the actual length of the Rhine (1230 km) and asked to remember what length she estimated. If the test participant is no longer able to recall her original estimate, she thinks about what she might most probably have estimated, arriving at a length of 1150 km.⁴⁵ The inaccurate memory is adjusted to the information provided immediately before the second estimate. The information serves as an anchor.

Confirmation Bias *Confirmation bias* refers to people's tendency to attempt to confirm a hypothesis they have already made. This means that information confirming a given hypothesis is perceived more accurately and given greater weight. By the same token, data confirming the hypothesis is actively sought after whilst data falsifying the hypothesis is disregarded.⁴⁶

Egocentric Bias *Overoptimism* and *overconfidence* are two closely related phenomena, which are usually summarised under the term *egocentric bias*:

People routinely estimate [...] that they are above average on a variety of desirable characteristics, including health, driving, professional skills, and the likelihood of having a successful marriage.⁴⁷

Overoptimistic people overestimate the likelihood of positive events whilst at the same time underestimating the risk of a negative occurrence. For instance, it is unrealistic if most drivers expect themselves to be less likely than other drivers to be involved in an accident—because, if true, the average statistical likelihood would have to be lower than it is.⁴⁸ Overoptimistic assertions are often based on *overconfidence*. Thus, most drivers consider themselves to be more skilled than the average driver, which gives them the impression to be able to avoid an accident by skilful driving.

Loss Aversion In 1979, Daniel Kahneman and Amos Tversky empirically observed *loss aversion*. The theory postulates that individuals ascribe greater weight to losses than to equivalent gains.⁴⁹ Consequently, potential gains are often not realised, as they are associated with potential losses on the same or a slightly lower level. As

⁴³ Tversky and Kahneman 1974, p. 1128.

⁴⁴ Guthrie, Rachlinski and Wistrich 2001, p. 788.

⁴⁵ Cf. Jungermann, Pfister and Fischer 2010, p. 175.

⁴⁶ Schweizer 2005, p. 178.

⁴⁷ Guthrie, Rachlinski and Wistrich 2001, p. 811 et seqq.

⁴⁸ Englerth 2007, p. 95.

⁴⁹ Kahneman and Tversky 1979.

a result, a neutral or positive expected value is distorted and turned into a negative expected value. As a result, the potential gains will not be realised.

Status Quo Preference The *status quo preference* is closely related to loss aversion: since change is associated with uncertainty or risk⁵⁰—and hence with potential losses—people tend to privilege the status quo over change.⁵¹

Endowment Effect The *endowment effect* may be interpreted as a sub-form of the status quo preference.⁵² Rationally speaking, a person should ascribe the same value to a good, irrespective of whether she possesses it or not. However, empirical studies have shown that people demand more money for goods in their possession than they are willing to pay for them.⁵³ In other words: the amount that a person is willing to pay in order to *buy* an object (*willingness to pay*) is always lower than the amount for which the person is willing to *sell* the object (*willingness to accept*).

Framing Effect Rationally speaking, it is immaterial whether, given a specific likelihood, a particular alternative for action is formulated positively in the form of potential gains or negatively as potential losses. In actual fact, however, people tend to favour an alternative when it is *framed* positively and to reject it when it is framed negatively (*framing effect*).⁵⁴ For example, people generally favour a rate of employment of 95 % compared to an unemployment rate of 5 %, even though both states are identical. The more concrete, personal and emotional the formulation, the greater the effect appears to be.⁵⁵

3.3.2 Social Decisions

Whilst systematic cognitive biases lead people to take decisions which maximize neither their own nor social utility, recent behavioural economics research into the way in which individuals take decisions has revealed new ways of influencing behaviour. It is thought that these insights may successfully be used to entice individuals to behave in manners that is optimal for them as well as society as a whole. The law—as an instrument for regulatory policy—is ascribed a prominent role in

⁵⁰ A fundamental definition of risk goes back to Frank H. Knight's paper "Risk, Uncertainty and Profit". Knight differentiates between the term "risk" as quantitatively measurable uncertainty and the term "uncertainty" for all non-quantifiable uncertainties. Accordingly, a decision will always involve risk if the probability of occurrence is known. By the same token, if the probability of occurrence is unknown, the decision will involve uncertainty (see Knight 1964, p. 19 et seqq.). People react more sensitively to risk than to uncertainty and to events that turn the impossible into the possible or the possible into the certain than to mere increases in likelihood (see Tversky and Fox 1995, p. 269 and 281).

⁵¹ Cf. Kahneman und Tversky 1979.

⁵² Both the endowment effect and the *status quo* preference are based on loss aversion (cf. Kahneman, Knetsch and Thaler 1991, p. 199).

⁵³ Kahneman, Knetsch and Thaler 1990.

⁵⁴ Kahneman and Tversky 1981.

⁵⁵ See e.g. Jolls and Sunstein 2006.

this respect.⁵⁶ There are essentially two ways in which the law can contribute to eliminate biases:

On the one hand, it may attempt to prevent the occurrence of boundedly rational behaviour by excluding all non-value maximizing options *ex ante*, for instance by means of prohibitions.⁵⁷ A hazardous product, for example, might not be approved by public authorities in order to protect consumers who underestimate the hazard risk (due to overoptimism). However, it is questionable whether this method is proportional, since it considerably impinges on individual autonomy.

On the other hand, it is also possible to help people overcome their cognitive biases via *debiasing*.⁵⁸ Debiassing may be achieved through *nudging*, that is to say by changing the individual's *choice architecture*⁵⁹ (i.e. the framework conditions under which a specific decision is made) order to nudge⁶⁰ the individual in a particular direction.⁶¹ Nudging occurs, for example, where *default rules* apply. A classic example of a default rule is the opt-out solution for organ donation. According to an opt-out default, all people are assumed to be organ donors after their death—unless they expressly opt-out during their lifetime. In comparison to the opt-in solution, where organs are only removed if express consent had been provided by the donor, such a rule can result in significantly higher figures for donations.

The following example relating to consumer protection explains how the law may contribute to mitigate cognitive biases. By deploying opposing heuristics (the availability heuristic and the framing effect), consumers' overoptimism may successfully be debiased.⁶²

Although rational choice theory assumes that consumers can make mistakes, these are based exclusively on *information asymmetry* between producers and consumers. Producers know their product, including its hazards, better than consumers, and can exploit this fact to their benefit. According to rational choice theory, minimising the information deficit can lead to an efficient result.⁶³ However, behavioural scientists assume that the information deficit is unable to account for all deviations from an efficient result. Even without information asymmetry, *overoptimism* might lead to inefficient results.⁶⁴ The law can take such a socially undesirable situation as a reason for expanding *product liability* or prohibiting a particularly hazardous product.⁶⁵ However, this leads to high economic costs: in the former case in particular for producers and courts, in the latter case mainly for consumers who

⁵⁶ On the law and economics analysis in conjunction with bounded rationality overall, see *inter alia* Jolls, Sunstein and Thaler 1998, Korobkin and Ulen 2000, Parisi and Smith 2004 and Sunstein 2000.

⁵⁷ See Rachlinski 2003, p. 1168.

⁵⁸ Cf. Thaler and Sunstein 2008.

⁵⁹ Thaler and Sunstein 2008, p. 81 et seqq.

⁶⁰ However, such an instrument may also be used in order to steer individuals in a politically desirable direction, which may involve more than mere debiassing.

⁶¹ Cf. Thaler and Sunstein 2008.

⁶² See Jolls and Sunstein 2006.

⁶³ See e.g. Stiglitz 1986, p. 90–91.

⁶⁴ *Inter alia*, Latin 1994, p. 1243–1244.

⁶⁵ See e.g. Prentice and Roszkowski 1991–1992.

would still be able to benefit from the use of a hazardous product.⁶⁶ A measure that only addresses boundedly rational (biased) behaviour and leaves rational behaviour intact is preferable. In this case, overoptimism may be debiased by both availability bias and framing effect:

Since the brain considers readily accessible data to be more likely to occur than data that is less readily available, overoptimism may be mitigated by the *availability bias*.⁶⁷ This may involve legislation obliging businesses to stress not only the positive but also—and in particular—the negative characteristics of their products in advertising.⁶⁸ The negative characteristics will spring more readily to mind, with the result that negative characteristics will not be crowded out by positive characteristics, enabling consumers to make a more balanced judgment. In Switzerland and Germany, for example, both health warnings and deterrent images must be applied to tobacco products (e.g. “Smoking causes fatal lung cancer” along with a picture of a healthy white lung and a black lung damaged by smoking). In order to ensure that consumers do not become accustomed to warnings and pictures (*wear-out effect*), these have to be changed from time to time.⁶⁹

The *framing effect* is one of the most important factors influencing human decision-making.⁷⁰ Based on loss aversion, the framing effect may also be used as availability heuristic in order to counter overoptimism by ensuring that the formulation of a particular scenario focuses on potential losses rather than potential gains.⁷¹ The more a given loss is presented in a tangible and personal manner, the greater its effect will be.⁷² The private anti-smoking campaign conducted by the American Legacy subtly uses the framing effect by using authentic farewell notes written by terminally ill smokers: “To my children, I don’t want you to be sad! Remember me, and forgive me for leaving you so soon. When it’s over, mom will just be sleeping.”⁷³ By exploiting the personal, emotional genre of the farewell note, which unequivocally draws out negative aspects, the loss is made *emotionally tangible*, reducing overoptimism. A narrative campaign that uses the framing effect has the additional benefit that the brain will regard it (subjectively) as being more likely to occur, since *real factual reports* are both more memorable and more readily retrievable than statistics.⁷⁴

However, this tactic is not unproblematic: on the one hand, consumers might be unable to cope with the *flow of information*. Hence it is expedient to limit the approach to products for which overoptimism is a known evil. On the other hand,

⁶⁶ Cf. e.g. Schwartz 1988.

⁶⁷ Jolls and Sunstein 2006, p. 209–210.

⁶⁸ Jolls and Sunstein 2006, 216.

⁶⁹ See e.g. Craig, Sternthal and Leavitt 1976.

⁷⁰ See e.g. Thomas and Millar 2011, p. 139–149.

⁷¹ In actual fact, a study on breast cancer prophylaxis by self-examination showed that stressing the negative effects of failing to carry out self-prophylaxis had a significantly greater impact on behaviour than stressing the positive effects (see Meyerowitz and Chaiken 1987, p. 505).

⁷² Cf. Jolls and Sunstein 2006.

⁷³ See <http://women.americanlegacy.org/about/ads.cfm> (visited on 20 April 2014).

⁷⁴ See e.g. Jolls and Sunstein 2006.

such an approach might *shoot over the mark*, which would occur, for example, if arguments referred exclusively to worst-case scenarios.⁷⁵ Thus, it is of the utmost importance to strike the right balance at all times when selecting scenarios.

By helping individuals to overcome their cognitive biases, the law can contribute to increasing utility not only on an individual but also on a social level. The major advantage of debiasing through the law lies in the fact that it is a *relatively mild instrument*, as the individual can continue to decide autonomously. Changing the decision-making architecture on the individual level is generally preferential to eliminating choices (prohibition), as long as it involves pure debiasing and not politically motivated nudging.⁷⁶ The presented method for debiasing does not open the floodgates to manipulation: first, it is limited to overcoming boundedly rational (biased) behaviour and second, in a state governed by the rule of law any encroachment, including debiasing mechanisms, must be *transparent* and *democratically legitimated*.

That said, there are indeed serious problems with the approach. Generally speaking, it has to be borne in mind that boundedly rational behaviour induced by cognitive biases may in many situations be the lesser evil: the cost of avoiding biased behaviour may quickly surpass the incurred welfare penalty resulting from it.⁷⁷ This is not unlikely, especially if it is considered that the debiasing attempt may overshoot the mark. Thus, any debiasing by the law should only be considered if the potential gain on both the individual and the social level is high.⁷⁸ Also, it is unnecessary to intervene through legislation where people are able to overcome their biases by themselves, for example by means of *introspection*.⁷⁹ By the same token, if there is an information deficit, the authorities should limit their action to providing information in a way that is as neutral as possible.⁸⁰

Finally, public officials are not omnipotent and are often ill-informed about the actual preferences of the general public. Moreover, they themselves are not free from self-interest or biases:

The real problem lies [...] in identifying what people do or would want, and in deciding whether choice architects can be trusted. Perhaps choice architects do not know what people would want, if properly informed, and perhaps their own motivations are not pure. Perhaps the very idea of what people would want, if properly informed, raises difficult conceptual puzzles, at least in some cases, and creates unacceptable risks of overreaching by choice architects.⁸¹

⁷⁵ Sunstein 2002.

⁷⁶ Rachlinski 2003, p. 1224.

⁷⁷ Jolls and Sunstein 2006, p. 225 and 234.

⁷⁸ Jolls and Sunstein 2006, p. 230.

⁷⁹ Cf. Jolls and Sunstein 2006, p. 226, see also Rachlinski 2003, p. 1206–1219 and Rasmussen 1998, p. 1697–1698.

⁸⁰ However, Jolls and Sunstein 2006, p. 232 correctly point out that information can never be entirely neutral since it is inevitable to make linguistic choices when putting thoughts into words. This means that it is virtually impossible to draw a clear line between “neutral information” and “steering manipulation”.

⁸¹ Sunstein 2014, p. 158.

Indeed, steering behaviour using the tools of behavioural economics may represent a step back to a time before public choice, when the state was regarded as a *benevolent dictator*. The rational choice approach can provide valuable insights in this respect. Furthermore, rational choice fundamentally questions the need for debiasing through the law in general and in particular in cases involving politically motivated nudging. However, government action always has an impact on the decision-making architecture of individuals, irrespective of whether such an outcome was intended or not.

3.4 Conclusion

The insights gathered by behavioural researchers over the past thirty years can no longer be disregarded by economists. This accounts for the corresponding shift within law and economics from the traditional economic analysis towards the behavioural economic analysis of law. On the one hand, the law faces new challenges due to this *behavioural turn*. On the other hand, the same development opens up new possibilities for mastering them, amongst others *libertarian paternalism*.⁸²

Despite the sustained interest in the results of behavioural research in both academia and in practice, it should be noted that, in contrast to rational choice theory, behavioural economics does not offer an all-embracing model based on a limited number of parameters. Its insights are not derived from a general theory, but rather stem from disparate empirical observations. In spite of all the criticism, in most cases the rational choice approach provides robust explanations and forecasts, whilst behavioural economics deals with—albeit important—marginal phenomena.

The two approaches are not mutually exclusive, but complement each other: whilst the rational choice theory is based on system 2, modern behavioural economics often aims at overcoming system 1. However, the usefulness—economic or otherwise—of cognitive rules of thumb is too often overlooked. Future research should thus strive to reconcile rational choice theory with behavioural economics.

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⁸² Cf. Sunstein and Thaler 2003; also see Mitchell 2005.

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