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Prospect Theory and Political Decision Making

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Risk is a central feature of political decision making. Prospect theory, an empirically correct theory of choice under risk that deals precisely with this condition, therefore seems to have much to offer political science. Prospect theory's central finding is that individuals' attitude toward risk depends on whether they face losses or gains. Confronting gains, individuals are risk averse in their decision making; confronting losses, they are risk accepting. Where do these preferences come from? Do they also hold for collective decision making? How can prospect theory help us to solve puzzles in political science? This article addresses these questions by discussing some advances in evolutionary biology, behavioural economics, psychology, neuro-economics and political science. The article shows that there is increasing evidence that prospect theory preferences have an evolutionary origin and that these preferences extend to collective decision making. Moreover, it demonstrates that political science can indeed gain from applying prospect theory, as insights from prospect theory help to solve puzzles such as why some governments pursue electorally risky welfare state reform but others do not.

Keywords: prospect theory; political decision making; risk; behavioural biases; evolution-ary origins

Almost all decisions by political actors entail a certain degree of risk, whereby risk is the probability that an event occurs (e.g. losing the election) times the impact that it did (e.g. losing office). For understanding the conditions under which specific decisions are taken (and not others), we therefore need a theory that can deal with decision making under risk. Prospect theory, a descriptively correct psychological theory of choice, is precisely such a theory (Kahneman and Tversky, 1979; 2000). This theory's central finding is that people make different choices when facing losses and when confronting gains. In the face of losses, people are risk accepting in their decision making. When facing gains, conversely, they act in a risk-averse way. Prospect theory hereby differs from rational choice accounts based on expected utility in which people base their choices on end states, not on losses or gains, and which typically assume that people are risk averse. In contrast to cultural and constructivist critiques of rational choice, prospect theory accepts rational choice's choice-theoretic foundations. What the theory criticises is rational choice's ability to describe adequately how people make decisions under conditions of risk (Levy, 2003, p. 215).

In the early 2000s, there have been several excellent overviews and reviews of (the value of) prospect theory for political science (Boettcher, 2004; Levy, 2003; McDermott, 2004; Mercer, 2005). Drawing on these works, among others, I first summarise prospect theory's central features and discuss behavioural biases. Next, I extend the existing literature on prospect theory by discussing some of the advances in, among others, evolutionary biology,

experimental psychology and neuro-economics.¹ These advances help us to understand better why people display prospect-theoretical preferences. Subsequently, I discuss (partial) solutions to two key issues regarding the application of prospect theory in political science: (1) the lack of a theory of framing; and (2) the extent to which prospect theory's central finding – originally based on individual decision making – extends to collective decision making. While not endeavouring to offer a comprehensive overview of all papers using prospect theory in political science that have been published in, say, the last five years, the article next discusses a selection of recent studies in political science using prospect theory which show how and when this theory can help one to understand political decision making under risk better. The final section provides some conclusions.

Prospect Theory: Central Finding and Behavioural Biases

Three decades ago, Daniel Kahneman and Amos Tversky (1979) developed prospect theory as a behavioural alternative to expected utility theory since the latter theory's predictions continually failed empirically (see also DellaVigna, 2009; Kahneman and Tversky, 2000). According to Colin Camerer (2005, p. 129), prospect theory is much more than an alternative for expected utility theory; it is 'a perceptual and psychophysical perspective to thinking about money, goods, and risk'. Prospect theory has certain characteristics that distinguish it from other theories, such as expected utility theory on which rational choice (institutionalism) is based. A principal feature of prospect theory is that it posits that individuals' risk tendency varies across contexts, with individuals being risk averse in the domain of gains and risk accepting in the domain of losses. This means that the propensity to take risks is thus not a stable personality trait, with some individuals being prone to take risks while others always steer away from them (but see below). This does not exclude the possibility that some people overall are more risk accepting or risk averse than others (for a recent discussion of the heritability of risk attitude, see Zhong *et al.*, 2009). The context (domain of gains or losses) influences the degree and direction of risk an individual is willing to take. Individuals use a reference point, usually the status quo, to establish whether they find themselves in a situation or domain of losses or of gains. The risks an individual is willing to take do not only depend on the context, but are also asymmetric. Because individuals are *loss averse*, 'losses loom larger than gains' (Kahneman and Tversky, 1979, p. 279) and 'losses hurt more than equal gains please' (McDermott, 2004, p. 298; see Camerer, 2005). Losses weigh typically two to two and a half times more heavily than gains. Consequently, individuals adapt more rapidly to positive changes in their situation (such as a pay rise) than to negative ones (such as a pay cut), and losing twenty dollars hurts more than finding twenty dollars pleases. Loss aversion, 'an even more fundamental phenomenon than previous work has documented' (Akalis, 2008, p. 390), makes people averse to change and thus reinforces the status quo. Specifically, 'individuals have a strong tendency to remain at the status quo, because the disadvantages of leaving it loom larger than advantages' (Kahneman *et al.*, 2000, p. 163; see also Samuelson and Zeckhauser, 1988).

The so-called *negativity effect*, summing up the 'losses loom larger than gains' proposition, aggravates the status quo bias. A negativity effect refers to 'the greater weight given to

negative information relative to equally extreme and equally likely positive information' (Lau, 1985, p. 119). Another bias is the *certainty effect*, which means that 'people overweight outcomes that are considered certain, relative to outcomes which are merely probable' (Kahneman and Tversky, 1979, p. 265). The deviations from the expected utility theory's predictions occur among other factors because of the combination of the above biases: loss aversion, the status quo bias, the negativity effect and the certainty effect (see also Gilovich *et al.*, 2002; Jones, 2001; Jervis, 2004; Weyland, 2006). Jonathan Baron (2010, p. 10) argues that political behaviour might be even more prone to decision biases and fallacies than is market behaviour.

Going Back to the Roots: On the Origin of Behavioural Biases

Why do people display these biases in decision making? Why are we not what Richard Thaler and Cass Sunstein (2008) label *Econs*, individuals who think and choose unfailingly well and fully in line with textbook economics, but *Humans*, individuals who display biases in decision making and consequently fail even to come close to the textbook standard? An increasing amount of work drawing on evolutionary biology and neuro-economics suggests that we, so to speak, cannot help ourselves, as this behaviour is hardwired. Rose McDermott and her colleagues (2008), for example, propose that prospect-theoretical preferences have an evolutionary origin (see also Camerer, 2005, p. 129; Rieger, 2009). By adapting a model from risk-sensitive optimal foraging theory, McDermott *et al.* show how risk-accepting behaviour in the domain of losses (e.g. when facing starvation) and risk aversion in the domain of gains may be the optimal strategy for an individual who: (1) endeavours to maximise his or her chances of survival over time; and who (2) is subjected to an environment in which abundance and scarcity vary.

If prospect-theoretical 'tendencies concerning risk propensity lie more deeply rooted in human evolutionary psychology' (McDermott *et al.*, 2008, p. 336), the implications for decision making are far-reaching. First, this suggests that cognitive biases, the deviations from rationality, are hard to overcome. Second, and related, it indicates that individuals may be not very likely to learn over time or through experience to overcome these tendencies (Harbaugh *et al.*, 2001).

Experimental evidence on primates, more specifically on capuchin monkeys, shows that behavioural biases – such as loss aversion – also extend beyond the human species (Chen *et al.*, 2006). These monkeys prove to have clear preferences, as humans do, and their preferences change when they are facing gambles (that is, in the presence of risk). The monkeys preferred the experimenter who showed first one apple and later with a 50:50 chance delivered two apples instead of one over the experimenter who first showed two apples and later with a 50:50 chance delivered one apple instead of two. This finding suggests that monkeys too do not like to lose (by having first two apples and later only one). Although Alan Silberberg *et al.* (2008) argue that there is a problem with Chen *et al.*'s experimental design, the experiments of Benjamin Hayden and Michael Platt (2009) support the latter's finding that the decision patterns of humans and monkeys are surprisingly similar. This result indicates that decision-making patterns and biases may

indeed extend beyond species. Individuals' tendency to make choices consistent with prospect theory's predictions may thus not only be hardwired, but loss aversion may be an innate and evolutionary ancient feature of human preferences. It is a function of decision-making systems, which evolved before the common ancestors of capuchins and humans diverged (Chen *et al.*, 2006, p. 520).

Given these findings on the evolutionary origin of prospect-theoretical preferences, it comes hardly as a surprise that the greater sensitivity to losses than to gains according to some studies shows up in our brain activity as well (Kuhnen and Knutson, 2005; Loewenstein *et al.*, 2008, pp. 652–5; Smith *et al.*, 2002). For example, based on experiments with two individuals with damage to the amygdala – a region in the brain – and matched control experiments with individuals without such damage, Benedetto De Martino and his colleagues (2010) show that the amygdala likely plays an important role in the computational process leading to loss aversion. That is to say, the amygdala is the neural structure mediating loss aversion. However, earlier findings by Sabrina Tom and her colleagues (2007) conflict with De Martino *et al.*'s results. Using functional magnetic resonance imaging (fMRI) to examine which brain systems represent potential losses *vis-à-vis* potential gains at the time when a decision is being made (so-called decision utility), Tom *et al.* find hardly any amygdala activity when the size of the potential loss increases. Since amygdala activation typically occurs during negative affective responses (such as fear, discomfort or vigilance), this would suggest that the amygdala's role in loss aversion is at least not necessary. These two examples indicate that people's responses to losses and gains do seem to be traceable in brain activity. However, how this happens exactly and which neural structures are involved remains an area requiring more work.²

Problems in Prospect Theory

When applying prospect theory in political science some problems arise (see also Mercer, 2005). One of the issues is the *aggregation problem* (compare Levy, 1997, pp. 102–4). Since prospect theory is developed as a theory of individual decision making, the question is whether it is applicable to collective decision making.³ One way of getting around the problem is by applying prospect theory to individual decision making. This is the route taken by, for instance, Matthew Fuhrmann and Bryan Early (2008) in their study of an ambitious and successful nuclear disarmament initiative – the Presidential Nuclear Initiatives (PNIs). Fuhrmann and Early demonstrate that prospect theory is the only account that can explain president George H. W. Bush's willingness to accept the risk involved in the launching of PNIs as well as the timing of the initiative. By specifically focusing on Bush's decision making, Fuhrmann and Early circumvent the aggregation problem. John Patty (2006) also studies individual decision making, specifically whether or not a voter turns out for the midterm, congressional elections in the United States. Patty argues that only those voters facing losses, that is, those voters unhappy with the policies of the president, have an incentive to bear the costs of voting in the midterm elections. Hereby loss aversion among individual voters can account for the puzzle that the president's party typically loses in the midterm election.

In many studies of political behaviour, the aggregation problem is not circumventable because collective decision making is what matters. But is it a problem? There is a substantial body of experimental and empirical evidence – in a variety of (sub-)disciplines that political scientists typically do not refer to – suggesting that this problem is smaller than it may seem. Experimental evidence indicates that pairs of individuals violate the predictions of expected utility theory in the same manner as do individuals (Bone *et al.*, 1999; see Kameda and Davis, 1990). Glen Whyte (1993), for example, uses six investment decision scenarios to compare individual and group decision making in escalating commitment – that is ‘the tendency to continue an endeavor, regardless of its merits, once an investment in time, effort, or resources has been made’ (Whyte, 1993, pp. 430–1). Support for prospect theory’s key finding was found at both levels of analysis, but the findings were stronger at the group level. Since political actors’ decision making often involves sunk costs, prospect theory seems especially suited for accounting for such behaviour. Anton Kühberger’s (1998) meta-analysis of 248 published journal articles from fields as diverse as medicine, applied psychology and business – all experiments with human adults focusing on risky decision making – also supports the assumption that prospect theory applies to collective decision making.

Summing up, the aggregation problem may not be that big a problem after all. Regarding individuals’ decision making, the aggregation problem by definition does not materialise and prospect theory is applicable. With respect to collective decision making, prospect theory is usable because experiments, meta-analyses and real-world data indicate that groups display the same pattern of risk attitudes as do individuals and are in line with prospect theory.

Another pending issue is that prospect theory lacks a theory of framing. Consequently, it is unclear how to determine when political actors consider themselves to be in a gains or losses domain. There is a large body of research suggesting that framing does matter, as Tversky and Kahneman (1981) demonstrated in their well-known ‘Asian disease’ experiment (see also Kam and Simas, 2010; for a discussion of studies examining framing effects, see, e.g. DellaVigna, 2009, pp. 347–8). Despite an attempt by Michael Kanner (2005) to develop a formal dynamic theory of framing and work by Cindy Kam and Elizabeth Simas (2010) that shows *who* is more or less likely to be affected by different frames, this problem is far from being solved. This lacuna therefore warrants attention in future work.⁴

The Gain of Prospect Theory in Political Science

Against the backdrop of the possible hardwiredness of prospect-theoretical preferences and the at least waning problems of applying this theory empirically, what is the gain of prospect theory in political science? What do studies employing this theory have to offer and what can studies that do not use it gain by doing so? In past years, there have been quite a few scholars in International Relations (IR) who have employed prospect theory (two recent contributions include Sheaffer and Dvir-Gvirsman, 2010; Tir, 2010). Since the sub-disciplines International Political Economy (IPE) and Comparative Politics (CP) have

been particularly slow on incorporating prospect theory in their work, this section – admittedly selective and incomplete – discusses some recent contributions that focus on IPE and CP. With regard to the former, a recent paper by Deborah Elms (2008) is very helpful for demonstrating the value of prospect theory and of behavioural economics more broadly. Specifically, Elms convincingly shows that insights from behavioural economics often offer a more convincing account of puzzles in IPE than do rival accounts. To support this claim, Elms selects three publications from a key IPE journal, *International Organization*, of which she discusses the empirical puzzle and the original explanation. Subsequently, she shows how the same puzzle is solved more convincingly by drawing on insights from behavioural economics, such as loss aversion.

An interesting contribution in CP is Annette Steinacker (2006), who uses insights from prospect theory to explain why governments act on certain externality problems but not on others. Steinacker argues that because of loss aversion, governments are more likely to act on a situation constructed as entailing a negative externality than one that produces a positive externality. Hereby, she offers a simple yet convincing explanation for an otherwise puzzling phenomenon.

This author (Vis, 2009; 2010) focuses on the puzzle that some governments are willing to accept the great electoral risk involved in unpopular welfare state reform, while other governments of similar political colour and facing the same institutional circumstances refrain from pursuing unpopular policies. I argue that by influencing the risk attitude, and thereby the willingness to pursue risky reform, socio-economic and political gains and losses drive governments' behaviour in welfare state reform (see also Vis and Van Kersbergen, 2007).⁵ I show that in almost all instances in which British, Danish, Dutch and German governments between 1979 and 2005 pursued unpopular welfare state reform, the government faced a deteriorating socio-economic situation (e.g. falling growth rates, rising levels of unemployment). My analysis reveals that a deteriorating socio-economic condition is necessary for the occurrence of unpopular reform. Hereby, I empirically demonstrate the value of a prospect-theoretical account for understanding better the politics of welfare state reform.

Focusing on party behaviour, Zeynep Somer-Topcu (2009) shows that parties shift their policies more if they have lost the previous election than when they have won it. She proposes that a lost election signals to a party that public opinion has moved away from its policy position. For safeguarding future gains, changing the party's policy in line with public opinion thus seems a logical strategy. However, compared to doing nothing, changing a policy position is a risky option since it is very hard – if not impossible – to know beforehand what will be the precise effect of the policy change. A party that changes its policy position is thus risk accepting, while a party that does not change its policy position is risk averse. Which of the two a party chooses to do depends on the past election result, whereby the time elapsed since the previous election functions as a moderating variable.

A prospect-theoretical account can also help to explain existing findings in CP better. For example, Lucio Baccaro and Marco Simoni (2008, p. 1323) pose the intriguing question

of why some governments (but not others) are willing to 'share their policy-making prerogatives with trade unions and employer associations, not just informally by incorporating their inputs but also formally by setting up a bargaining table and engaging in negotiations with them over public policy'. Based on four paired case studies, Baccaro and Simoni show that being weak electorally is an important condition for sharing policy prerogatives. Being strong electorally, that is, holding comfortable majorities, is conversely an important condition for moving away from such sharing. According to Baccaro and Simoni (2008, p. 1342), the weak governments are willing to do so because 'it allows them to activate supplementary channels of consensus mobilization. [These governments] are willing to bring the trade unions on board when these still pose a credible threat for the smooth implementation of policy, but their organizational fortunes have been declining in recent times, thus moderating their bargaining policies'. Baccaro and Simoni's finding not only tallies well with prospect theory's central finding, but prospect theory can also help to explain this finding better. Confronting gains (a comfortable majority in parliament), governments are unwilling to give up what they have and act in a risk-averse way. In such a context, they have no reason to give up something (in this case policy-making autonomy) and – being loss averse – they thus will not do so. The situation is very different for governments in a dire electoral situation. Faced with such losses, these governments may go out and gamble by giving up something (part of their policy-making autonomy) to recoup some of the losses incurred (attempting to become stronger electorally again). Overall, adding prospect theory places Baccaro and Simoni's interesting finding on a stronger theoretical footing.

Summing up, this overview of studies demonstrates the value of prospect theory for explaining collective decision making. This is not to say that prospect theory is the only possible explanation: on the contrary. Prospect theory's insights may also supplement other explanations of collective decision making, such as the power of interest groups or dynamic pressures within legislative arenas. More precisely, these insights may foster a better understanding of these processes, such as under which conditions interest groups are able to influence policy making.

Concluding Remarks

By bringing together literature from (sub-)disciplines as diverse as evolutionary biology, psychology, behavioural economics, neuro-economics and political science, this study has set out to further the discussion on prospect theory in political science in three ways. First, it has shown that there is increasing theoretical and neurological evidence that individuals' tendency to behave as predicted by prospect theory (that is to say, the tendency to decide differently when facing losses than when facing gains) has an evolutionary origin and is thus hardwired in our cognitive system. Even though individuals can of course try to make decisions consistent with economic textbooks – acting as Econs – such an evolutionary root suggests that we are more likely to fall prey to decision-making biases such as loss aversion – making us Humans (Thaler and Sunstein, 2008). Whether they like it or not, the context or domain in which individuals find themselves (losses or gains) thus influences decision making. Facing prosperous conditions,

or gains, individuals take risk-averse decisions because they want to hold on to what they have. Confronting setbacks – losses – individuals take risk-accepting decisions since they try to recoup (some of) the losses suffered. Also the biases giving rise to this type of behaviour, such as loss aversion, seem to be hardwired. While we still only have scant understanding of exactly how our brains function, the evidence thus far suggests that people's responses to losses and to gains are visible in the brain.

The second contribution of this study is that it proposes that the so-called aggregation problem may not really be a problem. There is ample experimental and empirical evidence indicating that prospect theory's central finding extends to collective decision making. Moreover, many political decisions are individual so that prospect theory applies directly.

The third and final addition to the literature of this article is its (non-exhaustive) overview of some recent contributions of prospect theory, in IPE and CP, to illustrate the value of prospect theory in the sub-disciplines of political science. Given its promise of unravelling theoretical and empirical puzzles and given that some of the problems of applying prospect theory empirically have been reduced, many applications of prospect theory in the field may – and it is hoped will – follow.

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Notes

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- 1 See Loewenstein *et al.* (2008) for an overview of neuro-economics.
- 2 See Levy *et al.* (2010) for some recent examples.
- 3 Note that this problem does not apply solely to political science but also to other (sub-)disciplines focusing on collective decision making, such as organisation studies.
- 4 Another challenge relating to prospect theory is how to move from the laboratory to the field (Mercer, 2005, pp. 12ff.). The increasing body of literature that applies prospect theory to 'real-world' questions suggests that prospect theory also holds explanatory value outside the laboratory.
- 5 What exactly count as gains and losses in collective decision making is a difficult question, whereby the answer depends on the research question at hand and the public policy under study. When decision making is multidimensional in that it involves trading off goals as well as trading off courses of action, for example, applying prospect theory is not that straightforward. In this latter case, it may make sense to try to divide the decision-making process into several steps, with the gains and losses assessed per step.

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