

# Do Politicians Take Risks Like the Rest of Us? An Experimental Test of Prospect Theory Under MPs

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## Do Politicians Take Risks Like the Rest of Us? An Experimental Test of Prospect Theory Under MPs

Jona Linde  
Maastricht University

Barbara Vis  
Vrije Universiteit Amsterdam

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*Political psychologists have been quick to use prospect theory in their work, realizing its potential for explaining decisions under risk. Applying prospect theory to political decision-making is not without problems, though, and here we address two of these: (1) Does prospect theory actually apply to political decision-makers, or are politicians unlike the rest of us? (2) Which dimension do politicians use as their reference point when there are multiple dimensions (e.g., votes and policy)? We address both problems in an experiment with a unique sample of Dutch members of parliament as participants. We use well-known (incentivized) decision situations and newly developed hypothetical political decision-making scenarios. Our results indicate that politicians' deviate from expected utility theory in the direction predicted by prospect theory but that these deviations are somewhat smaller than those of other people. Votes appear to be a more important determinant of politicians' reference point than is policy.*

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**KEY WORDS:** prospect theory, reflection effect, probability weighting, politicians, experiment, elite decision-making

Over the past decades, psychologists and behavioral economists have produced an extensive body of research demonstrating that people deviate systematically from the predictions of expected utility theory by falling prey to decision-making biases (see, e.g., Camerer, 2003; Starmer, 2000). These findings are relevant for political scientists, since expected utility theory is the basis of rational choice—still a, or even *the*, dominant approach in many fields of political science (e.g., Bueno de Mesquita, 1981; Mearsheimer, 2001; for a recent discussion on the usefulness of rational choice theory, see Hug, 2014).

Two of the most prominent deviations from expected utility theory are *probability weighting* and the *reflection effect* (Tversky & Kahneman, 1981). Probability weighting implies that people do not treat probabilities linearly and are very sensitive to the possibility of ensuring a sure outcome. The reflection effect means that peoples' risk attitudes are influenced by whether outcomes are framed as gains or losses: for losses they are generally risk taking, but for gains they are risk averse. *Prospect theory* (Kahneman & Tversky, 1979; Tversky & Kahneman, 1992) is a theory of decision-making under risk and uncertainty that incorporates the body of research demonstrating deviations from expected utility theory. The choice regularities incorporated in prospect theory have been confirmed

by numerous studies (Starmer, 2000), mostly using student samples. However, behavior in line with prospect theory has also been confirmed for the general population (Booij, van Praag, & van de Kuilen, 2009), military decision-makers (Haerem, Kuvaas, Bakken, & Karlsen, 2011), physicians (McNeil, Pauker, Sox, & Tversky, 1982), patients (Eraker & Sox, 1981), and tax payers (Chang, Nichols, & Schultz, 1987). Prospect theory also explains many real-world examples of deviations from expected utility theory (Camerer, 2003).

Political psychologists have been quick to incorporate insights from prospect theory, especially the reflection effect, in their work (Levy, 2003; McDermott, 2004; Mercer, 2005; Vis, 2011).<sup>1</sup> Examples include studies of when governments pursue electorally risky reforms (Vis, 2010; Vis & Van Kersbergen, 2007), why individuals participate in collective action (Fanis, 2004), when states use extensive resources to resolve trade disputes with limited potential benefits (Elms, 2004), why some Latin American leaders pursue painful neoliberal adjustments (Weyland, 2002), and why some democratic leaders engage in international conflicts (McDermott, 1998; Taliaferro, 2004). These and other applications notwithstanding, prospect theory's impact in political science has been limited. This may be because of the potential problems that arise when applying prospect theory to political decision-making (Levy, 2003; Mercer, 2005). Our study addresses two of these problems.

The first and main problem we focus on is prospect theory's applicability to decisions by politicians. Prospect theory has been developed based on experiments with as participants students or, less often, members of the general population. But does the evidence for prospect theory also hold for politicians? Based on existing studies, the answer to this question is inconclusive. In this study, we therefore test this question directly.

The studies in political psychology we mentioned earlier typically suggest that prospect theory *is* applicable to politicians because it can explain political phenomena that expected utility theory cannot explain. However, because politicians may differ substantially from the general population, prospect theory could also *not be* applicable to politicians. First, politicians face decisions with uncertain outcomes on a regular basis and, without making any normative judgment, this makes them experienced in these types of decisions. Whether experienced decision-makers are also more likely to behave in line with expected utility theory is an open question though. Some studies find they are (List, 2004), while others demonstrate they are not (Fréchette, 2009). Second, politicians are a very select group; selected by themselves (Mattozzi & Merlo, 2008), their party (Rahat, 2007), and the electorate (Besley, 2005). They are selected based on certain characteristics, which possibly differ from the average person's. This process could select good decision-makers who may be less likely to violate a normative decision-making theory such as expected utility theory. Third, a few studies that examine politicians' attitudes toward risk directly suggest that these attitudes differ from those of the general population (Fatas, Neugebauer, & Tamborero, 2007; Hess, von Scheve, Schupp, & Wagner, 2013).

Thus, while the success of prospect theory in explaining political phenomena suggests that prospect theory accurately describes politicians' decision-making, the studies on expert decision-makers suggest it may not. However, none of these studies provides direct evidence of prospect theory's applicability to politicians. To directly test the competing expectations, we need an experimental design that is similar to existing studies—and thereby able to establish prospect theory's applicability—yet includes the “right” participants: politicians. Our experimental design does exactly this.<sup>2</sup> This design contributes to existing observational studies applying prospect theory since the latter cannot irrefutably demonstrate causal effects. Such studies show that prospect theory can explain an observed pattern, but they cannot assess if the behavior predicted by prospect theory is the causal effect

<sup>1</sup> Political scientists focus mainly on the value function proposed by prospect theory instead of on probability weighting. Both probability weighting and the value function predict the reflection effect.

<sup>2</sup> For details, see below and the online supporting information which is also available at [www.highriskpolitics.org](http://www.highriskpolitics.org).

(Palfrey, 2009). Our experiment instead provides direct evidence on prospect theory's applicability to political decision-making by examining politicians' decisions in a controlled environment.

The second problem of applying prospect theory to political decision-making relates to the identification of the reference point. Determining the reference point is always challenging because a theory of the reference point is absent (Boettcher III, 2004; Levy, 1997). But with outcomes in multiple dimensions, as is typically the case in political decision-making (e.g., a booming economy [gain] versus an unsuccessful military intervention [loss]), determining the reference point is particularly challenging. Behavioral decision research demonstrates that individuals find making decisions with outcomes in multiple dimensions difficult (Renshon & Renshon, 2008, p. 517), not least emotionally (i.e., how to sacrifice one value/issue over another?).

Two important dimensions for politicians are the electoral dimension and the policy dimension (Harmel & Janda, 1994; Müller & Strøm, 1999). Without a theory of the reference point, it is impossible to predict whether a politician is more likely to take a risk-taking decision or a risk-averse one when she faces a loss in one dimension (e.g., an economic crisis) and a gain in another (e.g., gaining seats in the polls). Two of our decision problems examine whether politicians reveal a reflection effect in the vote or economic policy outcomes dimension. A third problem explores which of these dimensions dominates when decisions have consequences in terms of both votes and economic policy outcomes.

The participants in our experiment come from a unique sample of Dutch parliamentarians (MPs, members of the lower chamber, *de Tweede Kamer*,  $n = 46$ , i.e., 30% of all parliamentarians), for which we collected data. The Dutch case lends itself well for testing whether politicians' decision-making is in line with prospect theory. The specifics of the Dutch political system, such as its nationwide party-list system and the high degree of proportionality, make it so that MPs do not need to be concerned with individual constituencies. This makes our experiment as clean as possible. Perhaps more importantly, MPs in the Netherlands are selected primarily by the party leadership. Such leaders have an incentive to select "experts," who would presumably be more likely to act in accordance with normative theories on decision-making such as expected utility theory. This makes the Dutch case a difficult case to find support for prospect theory. Given that existing work demonstrates that prospect theory's predictions hold in a variety of Western democracies (Post, Van den Assem, Baltussen, & Thaler, 2008; Shen & Chih, 2005)—but not necessarily in other contexts (such as China, see Brumagim and Xianhua 2005)—our findings should be generalizable to other Western democracies. To assess whether our experimental design results in the well-established findings on prospect theory, we have also run the experiment with a student sample ( $n = 176$ , see Appendix E in the online supporting information). The results of our experiment with the student sample are generally in line with existing findings.

Our main findings are that politicians exhibit the reflection effect, avoiding risk when outcomes are (framed as) gains and taking risks when outcomes are (framed as) losses, although we do not find this in all hypothetical political decision-making scenarios. We also find suggestive evidence for the weighting of probabilities. However, politicians do not exhibit another common deviation from expected utility theory, the common ratio effect. These findings increase our understanding of the microfoundations of political actors' decision-making under conditions of risk. Since most articles in political science using prospect theory base their hypotheses on the reflection effect, our article strengthens the validity of these studies' findings. At the same time, our results suggest some caution when applying other predictions of prospect theory directly to political decision-making.

The rest of this article is structured as follows. First, we discuss the main deviations from expected utility theory we focus on: probability weighting and the reflection effect. Next, we discuss existing studies' findings on risky decision-making by politicians. Subsequently, we present our empirical design and results. The last section concludes.

### Deviations From Expected Utility Theory: Probability Weighting and Reflection Effect

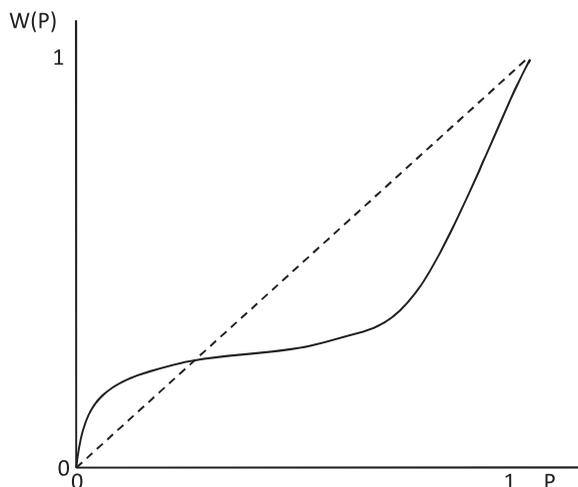
Although risk has several meanings in everyday language, for example as a close synonym for danger, in decision theory the risk of an option is the degree of uncertainty about a decision's outcome. This risk is most commonly measured by the outcome's variance. A choice is defined as risk taking (averse) if for two options with an equal expected value the decision-maker prefers the option with the higher (lower) variance. Risk is clearly important in political decision-making since politicians can hardly ever be sure about their actions' consequences. Examples include questions like: Will a new economic stimulus plan have the desired effect? Will a foreign intervention succeed? Will a new policy platform attract more votes?

Expected utility and prospect theory are the two most popular theories on decision-making under risk. Whereas expected utility theory *prescribes* how people should behave if they want to fulfill a number of attractive axioms, prospect theory aims to *describe* how people *do* behave. Expected utility is used as a descriptive theory as well, but ample evidence has shown that it fails in this respect (Starmer, 2000). Expected utility theory's prescriptions imply that people should make consistent choices, while prospect theory aims to explain why people deviate systematically from these prescriptions.

In expected utility theory, a (risky) option's expected utility is the sum of each possible outcome's utility multiplied by the probability of the outcome's occurrence. Consequently, preferences are independent of the circumstances; only the outcomes' probabilities and their utility matter; and probabilities have a linear effect on the option's value. The shape of the utility function fully determines decision-makers' preferences toward risk: they are risk averse (taking) when utility is concave (convex) in terms of outcomes. Concave utility implies that each additional unit of a good is less valuable than the last, for example, an extra apple is more valuable when you only have one apple than if you have two. This diminishing marginal value, or the shape of the utility function, defines risk attitudes in expected utility theory.

Prospect theory, conversely, indicates that risk attitudes are not only determined by the outcomes' utility but also by the reference point's location and through probability weighting. Our experiment focuses on these behavioral regularities. Probability weighting means that, unlike in expected utility theory, the effect of an outcome's probability on an option's perceived value is not linear. Particularly, small probabilities (generally  $p < 0.33$ , see Wakker, 2010, pp. 203–206) are overweighted and large probabilities are underweighted. Intuitively the idea behind this is that small deviations from absolute certainty (either 0% or 100% chance) have a large impact on perceptions, but a change in probability when something is already uncertain (e.g., a change from 20% to 80% probability) has less of an impact. Probabilities are generally underweighted; people act as if something is less likely to occur than it actually is. Figure 1 presents a prospect-theoretical probability weighting function.

The reflection effect is the behavioral regularity that people try to avoid risk when facing gains, but they embrace risk when facing losses. Probability weighting contributes to this behavior. Because probabilities are generally underweighted, the chance of a good outcome receives too little weight, making a gamble for gains look less attractive. The probability of a bad outcome is also underweighted, so a gamble over losses looks more attractive. Diminishing sensitivity strengthens this effect because this leads to a utility function that is concave for gains and convex for losses. However, because small probabilities are overweighted, people prefer a certain loss of equal expected value over a small probability of a large loss and prefer a small probability of a large gain over its expected value. Taken together, this leads to a *fourfold pattern*: risk aversion for gains and risk taking for losses, but risk taking for unlikely gains and risk aversion for unlikely losses. This pattern is one of the "major phenomena of choice" that Tversky



**Figure 1.** Example of a probability weighting function. The x-axis displays the actual probability and the y-axis displays the weighted probability.

and Kahneman (1992, p. 298) try to explain with prospect theory. A meta-analysis by Kühberger, Schulte-Mecklenbeck, and Perner (1999) confirms this general pattern.<sup>3</sup>

The reflection effect has been used regularly in political science, for example, to explain when governments pursue reforms (Vis, 2010; Vis & Van Kersbergen, 2007) or how leaders behave during international conflicts (McDermott, 1998; Taliaferro, 2004). The overweighting of small probabilities has been used to explain why politicians often advocate spending considerable resources to eliminate even the smallest chance of a bad outcome in international relations (Levy, 2003).

In addition to the reflection effect and probability weighting, we also explored another prominent feature of prospect theory in our experiment: loss aversion. Loss aversion predicts that because losses hurt more than gains please, people are risk averse if they can both gain and lose money. This is reflected in a utility function that is steeper for losses than it is for gains. Loss aversion is typically found in existing work (though not always; see, e.g., Ert & Erev, 2010). In our experiment, however, we did not find it in our student sample (see Appendix E in the online supporting information) and also not in our politicians sample. The first finding suggests that there might be an issue with the validity of the tasks testing for loss aversion, because of which we cannot draw meaningful conclusions for the politicians sample based on these tasks.<sup>4</sup>

### Existing Studies' on Risky Decision-Making by Politicians

What do existing studies focusing explicitly on politicians or other elite decision-makers conclude about these actors' decision-making under risk? Do politicians and other elite decision-makers behave like the rest of us? List and Mason (2011) find that CEOs are not more likely to behave

<sup>3</sup> For small probabilities, Kühberger et al. (1999) do not always find risk seeking for gains and risk aversion for losses but often behavior close to risk neutrality.

<sup>4</sup> Not finding evidence for loss aversion can be explained by the fact that our participants do not lose their own money in the experiment. Instead, losses were created by giving participants a sure amount from which they could lose. This may not be enough to induce a real feeling of loss since participants may see the fixed amount as house money (Thaler & Johnson, 1990). That this manipulation did reveal the reflection effect suggests that the reflection effect may be more a feature of the nonlinear weighting of probabilities, while loss aversion is a genuine feature of a person's preferences as prospect theory suggests.

according to expected utility theory than are other people. Specifically, List and Mason find that probability weighting—a key feature of prospect theory as we discussed above—is in fact much stronger for CEOs than for their student control sample. Also, Haerem et al.'s (2011) military decision-makers fail to behave as predicted by expected utility theory. However, the military decision-makers' behavior does not accord to prospect theory's predictions either. Instead, these actors are risk taking, independent of whether outcomes are framed as gains or as losses, while prospect theory predicts risk aversion in the gain domain. Nevertheless, conflicting expected utility theory's predictions, the military decision-makers were affected by the loss or gain frame since they became (even) more risk taking when outcomes were framed as losses.

The only study that directly tests prospect theory's predictions on a sample of politicians is Fatas et al.'s (2007) replication of Quattrone and Tversky's (1988) experiment on political choices. Quattrone and Tversky found evidence for the reflection effect and loss aversion among their sample (consisting of students) in hypothetical political decision-making scenarios. Fatas et al. presented these decision problems to a sample of 309 students (the control group with no expertise in political choice) and a sample of 32 elected politicians ("experts" in political choice). Fatas et al. found that reference-point effects did not disappear in the sample of politicians. Still, Fatas et al. also found significant differences between the expert (politicians) and nonexpert (student) samples regarding reference-point manipulations and decisions under risk. The latter results suggest that politicians might differ from the general population. However, Fatas et al. do not focus on politicians per se, but on politicians who could be expected to have strong expertise in decision-making under risk: politicians with a Ph.D. in economics—hardly representative for politicians in general. Although similar in terms of educational background, their participants came from very different political arenas (e.g., European parliament versus elected mayors), who may behave differently from one another. Compared to Fatas et al., we have a larger sample of politicians all of whom are MPs who were not selected on the basis of their educational background. Furthermore, instead of focusing on political decision problems only, our study also includes decision problems that have been used many times before to reveal deviations from expected utility.

Other studies examining politicians' decisions under risk typically do not test prospect theory's predictions directly, but they offer insights about politicians' general attitude toward risk. Hess et al. (2013) find that German Members of Parliament take more risks than the general population. This may be related to politicians being highly selected (see the introduction of our article). If the selection process has a tournament structure, where many candidates compete for a political office, this structure could select people who are more willing to take risk (Hvide, 2002). Kam (2012) shows that Americans who are more risk taking are more likely to participate in political life. These studies are more in line with the assumption that risk attitude is largely a stable personality trait (see also Ehrlich & Maestas, 2010) and not something that is shaped by the context in which a decision is made (e.g., whether an outcome is a loss or a gain).<sup>5</sup> However, general risk attitudes may interact with context effects. People who are generally more willing to take risks do so both in the loss and in the gain domains (Kam & Simas, 2012; Kowert & Hermann, 1997). This finding could mean that due to politicians' tendency to take risks, we do not confirm the reflection effect for them, but we find, for example, that they are risk taking for gains and even more risk taking for losses—as Haerem et al. (2011) found for military decision makers.

All in all, studies focusing on decision-making under risk by politicians and other elite decision-makers suggests that politicians may well deviate from expected utility theory in the same way other people do, but also that they may deviate less.

<sup>5</sup> Attitudes toward risk can also be influenced by other variables, such as idiosyncratic, cultural, political, or ideological ones (Levy, 1992).

## Experimental Design and Results

To test whether politicians are similar to the rest of us, that is, behave in line with prospect theory's predictions, we presented participants in our experiment with a total of 13 decision tasks in three parts. Part I consisted of six choices between two lotteries (so-called lottery-choice tasks) and tested expected utility theory's (EUT) main deviations. Part II consisted of three lottery-valuation tasks that tested for prospect theory's fourfold pattern (see the second section). Part III included four hypothetical political decision-making scenarios that tested whether prospect theory's predictions, specifically the reflection effect, are also observed in hypothetical choice situations relating more directly to politicians' real-world decision-making.

In Parts I and II, we used well-established problems from the literature, allowing us to compare our findings to a large body of existing work. Conversely, except for the standard "Asian disease" problem, the newly developed problems in Part III assessed the effect and importance of two different dimensions: votes and (economic) policy outcomes. We discuss the tasks' details prior to their results.

In all tasks, the probabilities of possible outcomes are known. In most real-life decision situations, probabilities are unknown, a situation referred to as uncertainty or ambiguity in decision science. However, research shows that behavior is relatively similar under risk and under ambiguity (see Trautmann & Van de Kuilen, 2016 for a discussion). To keep things simple for our participants, we therefore use known probabilities in our experiment.

To validate the tasks, we ran the experiment with a student sample.<sup>6</sup> Here we only discuss the results of the politicians; Appendix E in the online supporting information presents the results for the student sample. To prevent order effects, we presented participants with the three parts in a random order. Additionally, we randomized the order of tasks within the parts (e.g., the order of the six lotteries in Part I). Appendix A in the online supporting information provides an English translation of the instructions for all three parts of the experiment.

Task-related incentives, that is, incentives based on what happens during the task (such as participants' choices) (Bardsley et al., 2010), give participants a reason to take the task seriously (i.e., to generate experimental realism, cf. Druckman & Kam, 2011, p. 44). They also reduce participants' tendency to provide socially desirable responses (Camerer & Hogarth, 1999; see Bardsley et al., 2010: chap. 6 for an extensive discussion on incentives).<sup>7</sup> The latter may be especially relevant for politicians since Caprara, Barbaranelli, and Zimbardo (2003) found, based on a comparison between 103 Italian politicians and a large sample of the general public ( $n = 4,578$ ), that politicians scored significantly higher on the personality characteristic social desirability. Therefore, we provided financial incentives to our politician participants for the lottery-choice and lottery-valuation tasks. Politicians cannot be paid for participation in an experiment in the regular way. Instead, we used incentives in the form of a contribution to a charity that the participant could pick from seven well-known charities.<sup>8,9</sup> To make each decision that includes a monetary payoff relevant, but simultaneously ensure that tasks do not influence each other, we randomly selected one task that determined how much money was donated to the charity on behalf of the participant. Specifically, we randomly selected either the lottery-choice or the lottery-valuation part of the experiment, and then we randomly selected one task from this part. This avoided that participants' choices were influenced by so-called portfolio

<sup>6</sup> Druckman and Kam (2011) demonstrate that a convenience sample of students does not pose a problem for a study's external validity.

<sup>7</sup> Although the use of task-related incentives is not common (yet?) in political science, it is the norm in experimental economics. For example, every single study based on experiments in the flagship economics journal, *The American Economic Review*, published between 1970 and 1997 used task-related incentives (Bardsley et al., 2010, p. 244).

<sup>8</sup> Amnesty International; Cordaid; Dutch Cancer Society (*KWF Kankerbestrijding*); Oxfam Novib; Prins Bernhard Cultuurfonds (charity focusing on cultural heritage); Red Cross; and World Wildlife Fund.

<sup>9</sup> See Appendix E in the online supporting information for information on incentives in the student sample.

**Table 1.** Common Ratio Problem ( $n = 46$ )

Task	Percentage of Politicians Choosing Risky Option
Task 1	63.04%
<b>A) €28 for sure</b>	
or	
B) €40 with 80% probability and €0 with 20% probability	
Task 2	71.74%
C) €28 with 25% probability and €0 with 75% probability	
or	
<b>D) €40 with 20% probability and €0 with 80% probability</b>	
Difference (percentage points)	8.70%
<i>p</i> -value binomial-test	0.4545

*Note.* The predictions in case of a common ratio effect are displayed in bold.

effects (e.g., some safe and some risky choices for a balanced portfolio) or by previous earnings (Starmer & Sugden, 1991).

A total of 46 Members of Parliament (i.e., 30% of the Dutch parliament) participated in the experiment, which they performed online in the presence of at least one of the researchers. The number of participants per session varied (from 1 to 25), but since the experiment was done individually and in silence, this did not influence our results. The first experimental session was in September 2014 and the last one in January 2015. During this period, there were no elections or other high-profile political events. Of the participating MPs, 28% were female (a bit less than the 37% female MPs in parliament), 81% were university-educated (in line with the full population of MPs), their average age was 43.5 (idem), and 76.2% described their political position as (very) right-wing (substantially more than the around 50% right-wing MPs in parliament).

### *Probability Weighting*

*Common Ratio Effect, Lottery-Choice Tasks 1 And 2.* Our first two lottery-choice tasks (see Table 1 and Appendix B in the online supporting information for a more detailed discussion) assess the presence of probability weighting by examining whether a common ratio effect exists (Allais, 1953; see Kahneman & Tversky, 1979, 1984). In lottery-choice tasks 1 and 2, the expected utility of C is one-fourth that of A and that of D is one-fourth that of B. According to EUT, the ranking of A and B should thus be the same as that of C and D. However, in many earlier studies, and in our own student sample (see Appendix E in the online supporting information), participants choose the riskier option (B and D, a smaller probability to earn a larger amount) more often in problem 2 than in problem 1. Prospect theory explains this deviation from EUT through probability weighting: the difference between 100% and 80% is seen as large because 80% probability is underweighted, which makes A relatively attractive. The difference between 25% and 20% is seen as small; both are pretty small probabilities, so they are not or hardly underweighted, making D relatively more attractive. If there is a common ratio effect, the predictions for task 1 and 2 are A and D.

As Table 1 shows, we do not find the common ratio effect for politicians. Although the risky option is chosen 9% more often in problem 2 than it is in problem 1, this effect is far from significant. For both these tasks and the reflection effect tasks (see Table 3 below), we explored whether the probability of exhibiting the effect depends on several background variables (age, ideology, time in parliament, and gender), but none of these had a significant effect.

*Lottery-Valuation Tasks.* The lottery-valuation tasks explored probability weighting more generally. Here we briefly discuss the design; Appendix C in the online supporting information presents a more detailed discussion. The design of our lottery-valuation tasks is similar to Tversky and

**Table 2.** Lottery-Valuation Tasks, Average Difference Between the Valuation and the Expected Value of the Gain and Loss Treatments Lotteries for the Politicians Sample ( $n = 28$ )

Probability of Highest Amount	Gain Treatment	Loss Treatment
10%	€0.16	– €0.25
50%	€0.28	€0.75
90%	– €0.41	€1.13

*Note.* The sample size is smaller than the full sample since participants were presented with either the gain, mixed, or loss lotteries, and those presented with the mixed lotteries are not reported.

Kahneman (1992). Each participant is presented with three lotteries, either framed as gains (where outcomes are either €0 or €40) or as losses (where outcomes are either –€40 or €0). Each participant gets one lottery where the best outcome's probability is 10%, one where this probability is 50%, and one where this probability is 90%. We compensate participants for their potential losses by adding the maximum amount that could be lost in the lottery to the amount donated to the charity, independent of their choices. Then, the gain and loss treatments have exactly the same payoffs and the difference between the treatments is purely a difference in framing—which is precisely what we need. Participants' valuation for the lotteries is determined using a so-called multiple-price list; the method we used allows for a valid elicitation of valuations (see Appendix C in the online supporting information for the details).

The results of the lottery-valuation tasks, presented in Table 2, provide suggestive evidence for probability weighting, although it should be stressed that none of the observed differences are significant due to a lack of power. Looking at the gain treatment, the politicians were, on average, willing to pay 16 cents more than the expected value of the lottery with a 10% chance of winning. A willingness to pay more than a lottery's expected value is in line with prospect theory because the small probability of 10% is overweighted.

Prospect theory predicts that the larger probabilities of 50% and 90% are underweighted. Consequently, people are risk averse and are willing to pay less for the lottery than its expected value. We find this for the lottery with a 90% probability of winning but not for the lottery with a 50% probability of winning. None of the differences between the treatments are significant, nor are the valuations significantly different from the expected value.

Taking lottery-choice tasks 1 and 2 and the lottery-valuation tasks together, there is some evidence that politicians suffer from probability weighting, but this evidence is weak. The responses go in the direction expected by prospect theory, but the treatment effects are not statistically significant. For the lottery-valuation task, a lack of power prevents strong conclusions, but the results from lottery-choice tasks 1 and 2 suggest that politicians may behave somewhat more in line with expected utility theory than other people since they do not exhibit (strong) effects of probability weighting.<sup>10</sup>

### *Reflection Effect*

Lottery-choice tasks 5 and 6 test for the presence of the *reflection effect* (see Table 3), the finding that people are risk averse when outcomes are presented as gains and risk taking when they are presented as losses. In task 5, outcomes are presented as gains; in task 6 as losses. Because participants receive an additional €60 in task 6, the tasks are exactly the same in terms of final outcomes.

<sup>10</sup> We included one more task to explore probability weighting, a test of the so-called common consequence effect (see, e.g., Huck and Müller [2012] and Appendix B for an explanation of the task and Appendix E, Table E.2, in the online supporting information for the results). Because we did not confirm this effect in the student sample, we cannot draw definitive conclusions from this test for the politicians. However, the fact that we also do not confirm the effect for politicians is a further indication that politicians are similar to other people.

**Table 3.** Reflection Effect Problem ( $n = 46$ )

Task	Percentage of Politicians Choosing Risky Option
Task 5	39.13%
A) €60 with 33% probability and €0 with 67% probability	
or	
<b>B) €20 for sure</b>	
Task 6	76.09%
<b>C) €0 with 33% probability and –€60 with 67% probability</b>	
or	
D) –€40 for sure	
Difference (in percentage points)	36.96%
<i>p</i> -value binomial-test	0.0002

*Note.* The predictions in case of a reflection effect are displayed in bold.

Cumulative prospect theory (Tversky & Kahneman, 1992) explains the reflection effect as follows. Probability weighting is cumulative: It is the chance to get an outcome further from the reference point that is weighted, so in decision problem 5, the 33% chance to get €60 is weighted, while in decision problem 6, the 67% chance to get –€60 is weighted. Because both probabilities are of moderate size, they are underweighted (especially the 67%), leading to risk aversion for gains and risk taking for losses. Since 33% is likely to be underweighted less than 67%, the prediction is that more people will choose the risky option (C) in problem 6 than in problem 5 (A). Table 3 shows that we find a strong reflection effect. The risky option is almost twice as popular when outcomes are presented as losses. Clearly, politicians are very vulnerable to the framing of outcomes as gains or losses.

Also comparing the valuation of lotteries in the gain and loss treatments presented in Table 2 indicates that politicians exhibit a reflection effect. They are risk averse for small probability losses and large probability gains and risk seeking for large probability losses and small probability gains. However, it should again be noted that the results for the lottery-valuation task are not statistically significant.

*Hypothetical Political Decision-Making Scenarios.* Given that we find a strong reflection effect in the lottery-choice and lottery-valuation parts, we can explore: (1) whether politicians also exhibit this effect in hypothetical political decisions and (2) which dimension, votes or policy, dominates when outcomes are gains in one dimension and losses in another. To this end, we present our participants with newly developed hypothetical political decision-making scenarios.

The scenarios use outcome dimensions that are important in decisions regularly made by politicians (votes and economic policy outcomes). However, the scenarios remain a simplification of reality; they are not intended to be truly mundane. In the trade-off between experimental realism and manipulation control (Iyengar, 2011), we opt for control because this offers the best setting for identifying the dimension used as a reference point. We ask the participant to advise her parliamentary caucus to vote for or against a proposal,<sup>11</sup> which is a decision MPs face regularly and make individually (with advice from their staff). Prospect theory is a theory on individual decisions (as is expected utility theory), so this decision stays as close as possible to the theory and to our research question.<sup>12</sup>

We tell our participants to assume that (1) the proposal has no other consequences than those mentioned in the question, (2) there is no better alternative proposal available, (3) their caucus is

<sup>11</sup> In our student sample, participants were asked to put themselves in the position of a MP.

<sup>12</sup> How an individual politician's decision influences the outcome of the political process depends on many factors, such as the procedural rules or the power of different actors (Kerr, MacCoun, & Kramer, 1996). Still, existing evidence (Charness, Karni, & Levin, 2007; Rockenbach, Sadrieh, & Mathauschek, 2007) indicates that groups violate expected utility just as individuals do, although they may be somewhat more rational.

ideologically neutral towards the proposal, and (4) their vote choice is not affected by any potential coalition agreements. We do not expect our participants to fully conform to these assumptions. However, stating these four assumptions explicitly likely reduces the probability that different participants take different decisions because they view the decision-situation differently.

Every question is preceded by a description of the situation and the consequences of a vote in favor or against. In all scenarios, participants have to choose between a relatively risky (high variance in outcomes) and a relatively safe (low variance in outcomes) option in either a loss or a gain treatment. All four scenarios thus test for the presence of the reflection effect but they do so in different settings. Despite our instruction not to let ideology play a role, it may still be the case that left-wing politicians take different decisions than do right-wing politicians. This does not interfere with testing whether politicians behave in line with prospect theory's predictions because prospect theory does not predict a particular choice but an effect of the *framing* of the decision situation. To further reduce the effect of ideology, we never describe an actual policy over which the participants may have preferences, but we only describe the (expected) consequences of implementing the policy.

The first setting is the classical Asian disease problem (Kahneman & Tversky, 1984), presented as a choice between voting in favor of implementing program A or voting against it in which case program B is implemented. In the gain treatment, the program's effects are described as follows: Program A is implemented with 200 people saved, or Program B is implemented with a one-third probability that 600 people are saved and a two-thirds probability that 0 people are saved. In the loss treatment, the program's description is as follows: Program A is implemented and 400 people will die, or Program B is implemented with a one-third probability that 0 people will die and a two-thirds probability that 600 people will die.

In the second, third, and fourth settings, we manipulate gains and losses by changing the earlier expectations. The current situation is either described as better (gain setting) or worse (loss setting) than these earlier expectations. Earlier expectations are manipulated such that in absolute terms, the outcomes are the same. This is the same procedure as Kahneman and Tversky (1979, p. 273) used in two of their decision problems (11 and 12). The potential results of voting in favor of the proposal or against it are explained in words and presented in a table outlining the changes relative to the earlier expectations. Appendix D in the online supporting information presents the complete scenarios.

In the second setting, outcomes based on macroeconomic policy outcomes—unemployment and budget deficits—define losses and gains. We choose this setting because politicians care about these outcomes, independent of their ideology. In the third setting, outcomes are gains and losses with respect to the votes for the decision-maker's party. The fourth setting includes outcomes that are either gains in terms of votes and losses in terms of economic growth, or vice versa (i.e., a multidimensional trade-off).

Our hypothetical decision-making scenarios complement those of Quattrone and Tversky (1988), which take the perspective of a voter rather than of a politician. Our scenarios examine specific decision situations and are thereby narrower than Quattrone and Tversky's, allowing us to assess which dimension the participants take as their reference point.

Because the scenarios with outcomes framed as losses are very similar to those framed as gains, we present participants with either the loss or the gain treatment. For each scenario, it was randomly determined whether a participant was presented with the loss or the gain frame, so it was possible that a participant would get the gain frame for one scenario and a loss frame for another scenario. We also randomly determined the order of the scenarios.

When directly comparing loss and gain situations, we find a significant reflection effect for the Asian disease scenario (Table 4), but no significant effect for the other three scenarios. However, for the scenario with both economic and electoral outcomes, our participants are over 15 percentage points more likely to choose the risky option when outcomes are losses in votes. This effect becomes significant at a 5% level if we analyze the data of all political decisions together ( $n = 164$ ) and control

**Table 4.** Political Decision Problems ( $n = 46$ )

Scenarios	Loss Situation % Choosing Risky Option	Gain Situation % Choosing Risky Option	Fisher's Exact Test $p$ -value
1) Economic Outcomes	45%	50%	0.774
2) Votes	45.83%	40.91%	0.774
3) Votes and Economic Outcomes (loss/gain in terms of votes)	85%	69.23%	0.302
4) Asian Disease	88.46%	30%	<0.001

**Table 5.** Logistic Regression of Choosing the Risky Option (dependent variable) on Characteristics of Politicians and Scenarios ( $n = 164$ )

Variables	Odds Ratio
<b>Scenario (reference: economic outcomes)</b>	
Votes	0.576 [0.435]
Votes and Economic Outcomes	1.904 [0.361]
Asian Disease	0.569 [0.408]
<b>Loss Framing by Scenario</b>	
Loss Frame for Economic Outcomes	0.860 [0.827]
Loss Frame for Votes	1.599 [0.490]
Loss Frame for Votes and and Economic Outcomes (loss in terms of votes)	8.684** [0.033]
Loss Frame Asian Disease	14.633*** [0.001]
Age (years)	1.033 [0.259]
Time in Parliament (months)	0.995 [0.580]
Man	2.077 [0.177]
Right-Wing Politician (reference: centrist)	1.510 [0.500]
Left-Wing Politician (reference: centrist)	0.290 [0.173]
Constant	0.147 [0.140]

Note. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ ;  $p$ -values, based on robust standard errors clustered at the individual level, between brackets.

for background characteristics such as sex, age, parliamentary experience, and political orientation in a logistic regression (Table 5). None of the control variables have a significant effect on the likelihood of choosing the risky option, although men and right-wing politicians may be a little more, and left-wing politicians a little less, likely to choose the risky option.

Taken together, the findings from the incentivized reflection effect task, the lottery-valuation tasks and the Asian disease decision task all suggest that, like other people, politicians are susceptible to the reflection effect. However, in the hypothetical political decisions, our politicians only revealed the reflection effect in two of the four scenarios. One interpretation of this finding is that politicians

are less vulnerable to the framing of outcomes if they are more familiar with the type of decision. Arguably this explains why they do exhibit the effect in the Asian disease example and not in the scenarios with electoral or economic consequences. However, that does not explain why they do reveal the reflection effect in the scenario with votes and economic outcomes, which is probably most similar to real political decisions. Still, the effect is weaker for this scenario, suggesting that task familiarity may weaken the reflection effect for politicians.

A possible competing explanation for the lack of a reflection effect in the votes scenario is that MPs tried to provide socially acceptable answers. Since it is not socially desirable to consider electoral outcomes, MPs do not carefully consider the votes scenario, but, for example, make a random choice. Economic outcomes do not lead to a reflection effect because in this scenario, the decision's consequences do not influence the MP directly and are therefore considered more abstractly, leading to a decision that is more in line with expected utility theory. When both economic and electoral consequences are at stake, the outcomes are considered carefully, since a flippant decision about economic consequences would be considered wrong. However, the electoral consequences, which are more directly relevant for the MP making the decision, grab the attention leading to a reflection effect in terms of electoral outcomes.<sup>13</sup> Note that the reflection effect is much weaker in this last scenario, suggesting that at least some of the MPs managed to suppress the possible urge to let the electoral consequences determine their decision.

Another possible interpretation is that politicians, or people in general, are more likely to exhibit the reflection effect if the question is more difficult. The Asian disease problem is hard because the type of decision is highly irregular and the life or death setting adds pressure to the decision. The scenarios with votes *or* economic outcomes are very straightforward, but the scenario with votes *and* economic outcomes is more complicated since it entails trade-offs in different dimensions. Consequently, the scenario with votes and economic outcomes leads to a (weak) reflection effect. This interpretation does not explain why this reflection effect is revealed with respect to the votes dimension rather than the economic dimension when both are present. Both interpretations suggest that it is likely that MPs exhibit a reflection effect in their real-life decisions since these always entail possible votes and policy outcomes and are almost always more complicated than the scenarios we presented them with.

In summary, our findings on the reflection effect are as follows. We found strong evidence for the reflection effect in the two tasks that are used most often to study this effect: the Asian disease scenario and a choice between lotteries with financial outcomes. In the three political hypothetical decision-making scenarios, we only found a weaker effect in the scenario with electoral and economic consequences, rather than only consequences on one of these dimensions. In the scenario with electoral and economic consequences, the direction of the effect suggests that votes function as a reference point. We argue that these findings can be explained by a reference point in the votes dimension combined with socially acceptable answers, but we cannot exclude that task familiarity reduces the reflection effect.

## Conclusion

Prospect theory has been used quite extensively in political psychology. In political science in general, prospect theory has not been applied on as wide a scale as might be expected given its potential to explain decision-making under risk: a central feature of political decision-making. Problems

<sup>13</sup> This explanation is in line with the results from our student sample (see Table E.6 in Appendix E in the online supporting information). Like the MPs, the students showed a reflection effect in the Asian disease and the votes and economic outcomes scenarios but not for the economic scenario. However, unlike the MPs, they did reveal a reflection effect in the votes scenario, plausibly because they did not have the same motivation to provide a socially acceptable answer. Instead, they behaved as they thought politicians would and therefore cared about electoral outcomes.

that arise when applying prospect theory to such decision-making might be responsible for this. By means of an experiment with a sample of 46 Dutch members of parliament (i.e., 30% of all MPs), we addressed two of these problems. First, does prospect theory hold for politicians like it does for the rest of us? Second, which reference point do politicians use when a decision has implications in more than one dimension (votes versus economic policy outcomes)?

To address the first problem—prospect theory’s applicability to political actors—we presented politicians with well-known (incentivized) decision situations used to study decision-making under risk. The tasks were validated using a student sample. Our findings suggest that politicians, like other people, display the reflection effect, but, unlike other people, not the common ratio effect. The reflection effect was also confirmed in the well-known Asian disease problem. The reflection effect is the element of prospect theory that is most widely applied in political science, and our results validate these applications. However, our findings also suggest that using other predictions of prospect theory to explain political behavior might be more problematic.

For the second problem, which reference point politicians use with outcomes in more than one dimension, our evidence is less strong but nevertheless suggestive. We did not find the reflection effect when outcomes were framed as economic or electoral consequences. Still, politicians exhibited the effect, albeit weaker, in the direction suggested by a reference point in terms of votes when there were both economic and electoral consequences. This suggests that task familiarity may mitigate the reflection effect, but it can also be explained by a reflection effect in terms of the outcome that influences the politicians themselves the most—votes—possibly combined with socially acceptable answers.

Some issues are worth examining further. Are our findings influenced by right-wing politicians being overrepresented in our sample? Unfortunately, our sample is too small to test this. However, because the principles of expected utility theory resonate more with the ideological stance of right-wing politicians than with those of left-wing ones, we may assume that if either of the two would behave more in line with this theory, these would be the right-wing ones. If this is indeed the case, our sample made it harder to find support for prospect theory, providing a conservative test of prospect theory for politicians. Still, this is a question worthy of empirical investigation.

All in all, our experimental findings offer grounds for optimism regarding the application of the reflection effect, although perhaps with a measure of caution. Optimism may also be warranted regarding the decision-making abilities of politicians since they appear to abide by the normative precepts of expected utility theory to a greater extent than most other people, although they do exhibit the reflection effect. The results have increased our understanding of the microfoundations of political decision-making and thereby make a valuable contribution to the existing observational studies among other areas of political psychology.

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### Supporting Information

Additional supporting information may be found in the online version of this article at the publisher's website:

Appendix A: English Translation of the Experimental Instructions

Appendix B: Detailed Discussion of Lottery-Choice Tasks

Appendix C: Detailed Discussion of Lottery-Valuation Tasks

Appendix D: Hypothetical Political Scenarios

Appendix E: Results of the Student Sample Compared to the MP Sample

Table E.1. Common Ratio Problem

Table E.2. Common Consequence Problem

Table E.3. Reflection Effect Problem

Table E.4. Lottery-Valuation Tasks, Average Difference Between the Valuation and the Expected Value of the Nine Different Lotteries for the Full Student Sample ( $n = 176$ ).

Table E.5. Lottery-Valuation Tasks, Average Difference Between the Valuation and the Expected Value of the Nine Different Lotteries for Students with Incentives ( $n = 102$ ).

Table E.6. Political Decision Scenarios for the Full Student Sample ( $n = 176$ )