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Loss Aversion, Framing, and Bargaining: The Implications of Prospect Theory for International Conflict

JACK S. LEVY

ABSTRACT. Prospect theory deviates from expected-utility theory by positing that how people frame a problem around a reference point has a critical influence on their choices and that people tend to overweight losses with respect to comparable gains, to be risk-averse with respect to gains and risk-acceptant with respect to losses, and to respond to probabilities in a non-linear manner. This study examines these and related observed anomalies in expected-utility theory, summarizes how prospect theory integrates these anomalies into an alternative theory of risky choice, and explores some of the implications of prospect theory for international conflict and for bargaining and coercion in particular. One hypothesis is that political leaders of adversarial states behave differently when they are bargaining over gains than when they are bargaining over losses. Another is that crisis behavior may be more destabilizing than commonly predicted by rational choice theories because leaders are less willing to make concessions and more willing to risk large losses in the hope of eliminating small losses altogether.

Prospect theory was developed in the late 1970s by Kahneman and Tversky (1979) in response to accumulating evidence of systematic behavioral violations of expected-utility theory. It is now a leading alternative to expected utility as a theory of choice under conditions of risk.¹ Prospect theory is best known for its claims that people tend to overweight losses with respect to comparable gains, that they are generally risk-averse with respect to gains and risk-acceptant with respect to losses, that they respond to probabilities in a non-linear manner, and that how they frame a problem around a reference point has a critical influence on their choices. The theory generates a rich and intriguing set of hypotheses about international relations, but attempts to apply the theory outside the highly controlled environment of the experimental laboratory are plagued by a number of difficult methodological problems (Jervis, 1992; Levy 1992b; Stein, 1992).

In this study I examine some of the primary anomalies in expected-utility theory that emerge from experimental research in social psychology, summarize how prospect theory incorporates these anomalies, and explore some of the implications of prospect theory for international conflict in general and for bargaining and coercion in particular. One important theme is that the bargaining behavior of political leaders is different when the issue is the distribution of losses from that when the issue is the distribution of gains. Another is that crisis bargaining behavior is more destabilizing than rational choice theories predict because political leaders are less likely to make concessions and more likely to gamble and risk large losses in the hope of eliminating smaller losses altogether.

Descriptive Anomalies in Expected-Utility Theory

The expected-utility principle posits that actors aim to maximize their expected utility by weighting the utility of each possible outcome of a given course of action by the probability of its occurrence, summing over all possible outcomes for each strategy, and selecting that strategy with the highest expected utility. Expected-utility theory assumes that an actor's utility for a particular good is a function of net asset levels of that good, so that the marginal utility of changes in assets is a function of existing levels of assets. Most applications of the theory in the social sciences add the auxiliary assumption (Simon, 1984) that individuals have diminishing marginal utility for most goods, which is reflected by a concave utility function. This assumption is descriptively accurate for many types of behavior and enhances the analytical power and elegance of the theory, but diminishing marginal utility is not an essential component of expected-utility theory and violations of the former are not necessarily inconsistent with the latter.

An actor's attitude or orientation toward risk is defined in terms of the shape of an actor's utility function. An actor is risk-averse if his utility function is concave, risk neutral if his utility function is linear, and risk-acceptant if his utility function is convex. Given a choice between two options, one involving a certain outcome of utility x and the other involving a lottery or gamble with the equivalent expected utility x , a risk-averse actor will prefer the certain outcome, a risk-acceptant actor will prefer the gamble, and a risk-neutral actor will be indifferent between the two.

I now turn to experimental evidence of the various ways in which individual behavior deviates from the predictions of expected-utility theory.²

Reference Dependence

One finding is that people are more sensitive to changes in assets than to net asset levels. They think in terms of *gains* and *losses* rather than levels of wealth and welfare. Thus Kahneman and Tversky (1979: 273) argue that "the carriers of value or utility are changes of wealth, rather than final asset positions that include current wealth." These changes in assets are defined around a reference point (which is usually but not always identified with current assets). This *reference dependence* (Tversky and Kahneman, 1991: 1039) runs contrary to the standard expected-utility postulate of an individual utility function that is defined over levels of wealth and draws support from a variety of experimental studies (Tversky and Kahneman, 1986: S258; 1991). There is also evidence that the marginal value of both gains and losses is a decreasing function of their magnitude, which Tversky and Kahneman (1991: 1048–1050) refer to as *diminishing sensitivity*.

Kahneman and Tversky (1979: 277) concede that individual evaluations of changes in wealth or assets are not entirely independent of net asset levels, and that a more accurate representation would specify value as a function of both net asset position and the magnitude and direction of the deviation from a reference point. But they argue that evaluations of value are much more sensitive to the latter than to the former and that for the purposes of constructing a parsimonious theory of choice the impact of net asset levels can be ignored. They find, for example, that when people are faced with the choice between a lottery that involves a 50% chance of nothing with a 50% chance of winning \$1000 and the certainty of receiving a given amount of money (the *certainty equivalent*), the approximate amount which leaves most people indifferent between the gamble and the certainty equivalent (generally \$300–\$400) does not vary significantly as a function of the wealth of the subjects (Kahneman and Tversky, 1979: 277).

The notion that the primary carriers of value are changes in assets rather than net asset positions is the central analytic assumption of prospect theory. It leads Kahneman and Tversky to replace the utility function defined over asset levels to a *value function* defined over deviations from a reference point. A typical value function is displayed in Figure 1. The S-shape of the value function reflects diminishing sensitivity and has important implications for risk orientation, as we shall see.³

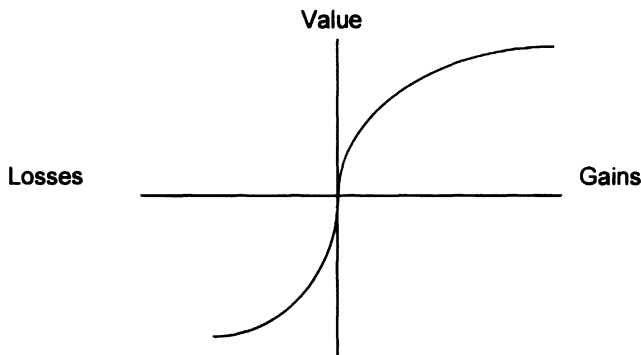


FIGURE 1. A Value Function.

Loss Aversion

The assumption that people are more sensitive to changes in assets than to net asset levels is also indirectly reflected by the fact that people respond differently to losses than to gains. They overvalue losses relative to “comparable” gains (*loss aversion*) and they have different *risk orientations* for losses than they do for gains.

Both experimental evidence from the laboratory and empirical evidence from natural settings clearly demonstrate the asymmetry in peoples’ evaluations of losses and gains. The basic finding is that losses hurt more than gains gratify. The pleasure people get from unexpectedly finding \$10 is less than the pain they suffer from losing \$10. Most people are disinclined to accept symmetric bets involving a fifty-fifty chance of winning or losing a given amount. As Jimmy Connors exclaimed, “I hate to lose more than I like to win” (Levy, 1992a: 175).

Loss aversion is reflected by the greater steepness of the value function on the loss side and is analytically distinct from risk orientation, which refers to the curvature of the value function. One can speak of loss aversion in choices among certain outcomes, as demonstrated by Tversky and Kahneman's (1991) recent reference-dependent model of loss aversion in riskless choice.

Loss aversion leads people to value what they have more than comparable things that they do not have. The pleasure of acquiring something new is less than the pain of losing current possessions of comparable value, and the very process of acquiring an object enhances the value of that object. People who acquire an item, even a fairly trivial item such as a school coffee mug, often refuse to sell it at prices they would not even consider paying for it in the first place. This over-evaluation of current possessions is the *endowment effect* (Thaler, 1980: 43–47). Loss aversion and the endowment effect also help to explain why people overweight out-of-pocket costs (losses) relative to opportunity costs (foregone gains). People tend to get more upset when they buy a stock which then drops in price than when they fail to buy a stock which then goes up.

There is substantial experimental evidence in support of the hypothesized endowment effect. In one experiment Kahneman, Knetsch and Thaler (1990) found that the average price at which randomly selected students are willing to sell school coffee mugs that they had just been given is twice as high as the average price at which other randomly selected students are willing to buy a mug.⁴ These experiments were designed to control for other possible explanations for the observed discrepancy between buying and selling prices, including strategic bargaining, learning through repeated trials or market experience, and transaction costs (Knez and Smith, 1987; Brookshire and Coursey, 1987; Coursey, Hovis and Schulze, 1987; Knetsch and Sinden, 1987).

If tokens are substituted for mugs, however, and subjects are allowed to sell tokens for cash, selling prices and buying prices were nearly identical. This and related experiments suggest that the endowment effect does not apply to normal commercial transactions. Money expended on an item is not treated as a loss, and goods purchased for eventual sale or barter—as opposed to use—generally do not generate an endowment effect (Kahneman, Knetsch and Thaler, 1991: 200). This has important implications for “bargaining chips” in negotiations. The experimental evidence, though tentative, suggests that endowment effects are stronger and more consistent if one is given physical possession of a good, as opposed to a property right to receive the good at some point in the future or a chance to receive such a good (Kahneman, Knetsch and Thaler, 1990: 1342).

These findings are particularly significant given the relatively trivial items used in the experiments and the fact that the endowments are windfalls and therefore somewhat artificial. In natural settings, where individuals often go to considerable efforts to acquire endowments in the first place and where the symbolic value of endowments may be quite high, we would expect the magnitude of the endowment effect to be even greater (Knetsch, 1989: 1282).

Risk Orientation

People also treat losses differently from gains in their attitudes toward risk: there is a tendency for people to be risk-averse with respect to gains and risk-acceptant with respect to losses. This means that individual utility functions are concave in the domain of gains and convex in the domain of losses and thus have a *reflection*

effect around the reference point (Kahneman and Tversky, 1979: 268). This pattern has been found repeatedly for a variety of individuals and situations (Fishburn and Kochenberger, 1979), but it may break down for very small probabilities or for catastrophic losses.

In a typical experiment 80 percent of respondents prefer a certain outcome of \$3000 to an 80% chance of \$4000 and 20% chance of nothing. If faced with the same two negative prospects, however, 92 percent of respondents prefer to gamble on an 80% chance of losing \$4000 and a 20% chance of losing nothing to a certain loss of \$3000. In both cases respondents chose the option with the lower expected value, and the combination of these two patterns is inconsistent with expected-utility theory. This experimental design has been repeated over and over with different sets of numbers, and the results are quite robust (Kahneman and Tversky, 1979: 268; Tversky and Kahneman, 1986; Quattrone and Tversky, 1988; Slovic and Lichtenstein, 1983).

Framing Effects

Because of the asymmetrical treatment of gains and losses and the importance of the reference point in defining these distinct domains, the identification of the reference point or *framing* of a choice problem becomes critical. One striking example of framing effects can be found in the medical example offered by Tversky and Kahneman (1986: S260):

Imagine that the US is preparing for the outbreak of an unusual Asian disease, which is expected to kill 600 people. Two alternative programs to combat the disease have been proposed. Assume that the exact scientific estimates of the consequences of the programs are as follows:

(Survival frame). If Program A is adopted, 200 people will be saved. If Program B is adopted, there is 1/3 probability that 600 people will be saved, and 2/3 probability that no people will be saved.

The identical description of the situation is given to a second group of subjects, but the same information about the alternative treatment programs is framed differently.

(Mortality frame). If Program C is adopted 400 people will die. If Program D is adopted there is a 1/3 probability that nobody will die, and 2/3 probability that 600 people will die.

In the survival frame 72 percent ($N=152$) of the subjects preferred Program A, indicating a risk-averse preference for saving 200 with certainty over a gamble with the same expected value. In the mortality frame ($N=155$), however, 78 percent preferred Program D, indicating a risk-acceptant preference for a gamble in the hope of preventing 400 people from certain death. The only difference in the choice problems faced by the two groups is the framing of the outcomes in terms of the number of lives saved or lost.

These results have been duplicated in many other experimental studies (McNeil et al., 1982; Tversky and Kahneman, 1986). They demonstrate that a change in frame can result in a change in preferences in spite of the fact that all of the key parameters of the choice problem remain the same. These *preference reversals* are inconsistent with the invariance axiom of expected-utility theory, which requires that logically identical choice problems should yield identical results (Kahneman and Tversky, 1979; Grether and Plott, 1979; Slovic and Lichtenstein, 1983;

Goldstein and Einhorn, 1987; Segal, 1988; Tversky, Slovic, and Kahneman, 1990). Although it might be possible for expected-utility theory to incorporate loss aversion, the reflection effect, and changing risk orientations over different domains, framing effects are much more difficult if not impossible to incorporate into expected-utility theory.

Framing effects are not always this strong. Their magnitude is a function of the *transparency* of the choice problem. If the similarities between two choice problems are quite obvious, behavior is more likely to be consistent with expected-utility theory. But in non-transparent situations where the similarities between two different representations of the problem are partially concealed, behavior is likely to deviate significantly from expected-utility theory (Kahneman and Tversky, 1979; Arrow, 1982). The medical example demonstrates that it does not take too much complexity to make a choice problem opaque.

In many simple choice problems the framing of the problem is largely predetermined by the situation (or the experimental design). In a static situation which involves a well-defined and salient status quo, for example, the status quo is likely to serve as the reference point. In other situations, however, the framing of a choice problem is more subjective and sensitive to how the individual responds to a situation and encodes a decision. This is particularly likely when the situation is changing, when there is no salient status quo, or where there is a sequence of successive choices rather than a single choice.

With respect to the latter situation, an important question is whether the reference point is defined in terms of one's asset position at the beginning of the series of choices (the cumulative frame) or with respect to one's current asset position after a series of actions have already been taken. If a gambler who suffers a series of losses adopts the cumulative frame of his asset position at the beginning of the evening, he will be more inclined to be risk-acceptant and attempt to recover his losses, whereas if he frames around current assets after the losses he will tend to be less risk-seeking. Someone on a winning streak, however, will be more risk-averse if he frames his choice in terms of his initial assets rather than the total assets at the time of each new bet.

This example illustrates the importance of how individuals *accommodate* to gains or losses. Accommodation to losses induces a tendency toward risk-aversion because any improvement in one's new position will be treated as a gain rather than as a recovery of losses; accommodation to gains induces risk seeking because any retreat from one's new position will be framed as a loss rather than a foregone gain. This leads to the question of whether people accommodate to change, in what direction, how quickly, and under what conditions. The literature provides few answers to this question, other than to say that framing is highly subjective, poorly understood and basically unexplored. In nearly all laboratory studies the reference point is inherent in the structure of the problem given to the subject, rather than a variable which is manipulated in order to examine its effects.

One hypothesis that emerges from the literature, however, derives from the tendency toward an *instant endowment effect* which applies to new acquisitions but not to new losses (Kahneman, Knetsch and Thaler, 1990: 1342). This implies that people accommodate or *renormalize* (Jervis, 1992) to gains more quickly than to losses. One implication is that under conditions of change there is a tendency for actors to shift toward a more risk-acceptant orientation more quickly than toward a more risk-averse orientation. If this is true, we would expect a gambler on a losing

streak to be more willing to take excessive risks than one on a winning streak, even though in strict monetary terms the latter can better afford any further losses.

The hypothesis of an instant endowment effect has important consequences for strategic interaction in dynamic situations. If A has just made a gain at the expense of B, B's attempt to recover his losses (from the old status quo) will be perceived as a potential loss by A (from the new status quo), so that both parties will be in the domain of losses and be more risk seeking than expected-utility theory would predict.

Response to Probabilities

Whereas the expected-utility principle posits that the utilities of outcomes are weighted by their probabilities in a linear combination, experimental evidence suggests that people systematically deviate from this principle. First of all, a number of studies (e.g., Allais, 1953) have shown that individuals overweight outcomes that are certain relative to outcomes that are merely probable. Because of this *certainty effect* (Kahneman and Tversky, 1979: 265) people attach greater value to the complete elimination of risk than to the reduction of risk by a comparable amount. This is graphically illustrated in an experiment involving a hypothetical game of Russian roulette, where people are willing to pay far more to reduce the number of bullets in a revolver from 1 to 0 than from 4 to 3 (Quattrone and Tversky, 1988: 730), even though the changes in expected utility are equivalent.

The certainty effect also interacts with the reflection effect in the value function to reinforce tendencies toward risk-aversion for gains and risk seeking for losses for choices between a certain outcome and a lottery. The overweighting of certain gains induces greater caution while the overweighting of certain losses encourages the gamble. This helps to explain the tendency to sell winners too early (to lock in a certain gain) and to hold losers too long (and thus risk a larger loss in the hope of avoiding a certain loss) (Shefrin and Statman, 1985).

People also overweight small probabilities, though if probabilities are extremely small behavior is unpredictable.⁵ Although extremely unlikely events are sometimes treated as if they were impossible, at other times they are overweighted. This unpredictability of response is reflected by behavior with respect to AIDS or to insurance against rare catastrophes. Thus Kahneman and Tversky (1979: 282–283) argue that “because people are limited in their ability to comprehend and evaluate extreme probabilities, highly unlikely events are either ignored or overweighted, and the difference between high probability and certainty is either neglected or exaggerated.”

In contrast to their response to small or extremely small probabilities, people tend to underweight moderate and high probabilities. This means that except for small probabilities people tend to give more weight to the utility of a possible outcome than to its probability of occurrence, rather than giving them equal weight as posited by expected-utility theory.

Summary of Prospect Theory

Prospect theory integrates these observed behavioral patterns into a theory of risky choice. Kahneman and Tversky distinguish two phases in the choice process. In the *editing phase* the actor identifies the reference point, the available options, the possible

outcomes and the value and probability of each (Kahneman and Tversky, 1979: 274, 284–285). In the *evaluation phase* the actor combines the values of possible outcomes with their weighted probabilities to determine the preferred prospect or choice.

Kahneman and Tversky have developed a formal (but not axiomatically based) model of the evaluation of prospects, but not a theory of editing or framing. Because of the subjectivity and unpredictability of framing, particularly in complex situations, they restrict themselves to choice problems “where it is reasonable to assume either that the original formulation of the prospects leaves no room for further editing or that the edited prospects can be specified without ambiguity” (Kahneman and Tversky, 1979: 275). That is, they focus on the evaluation of prospects rather than the editing of choices and treat framing as an exogenous rather than endogenous variable. A knowledge of the actor’s reference point is absolutely essential for any empirical application of prospect theory, however, and the absence of a theory of framing is the single most serious limitation of prospect theory and the most important task for future research.⁶

A detailed summary of prospect theory is not necessary here (see Kahneman and Tversky, 1979), but I want to note that attitudes toward risk are determined by the combination of the S-shaped value function and the probability weighting function and not by the value function alone. Although this combination usually generates risk-aversion with respect to gains and risk-acceptance with respect to losses, the overweighting of small probabilities can trigger a reversal of risk propensities under certain conditions, depending on the precise shapes of the two functions (Kahneman and Tversky, 1979; Levy, 1992a: 183–184).⁷ Thus the existence of small probabilities is a necessary but not sufficient condition for risk-aversion in the domain of losses and for risk-acceptance in the domain of gains.⁸

Implications for Negotiation and Bargaining

The most common reference point is the status quo, and most changes in the status quo are advantageous in some respects and disadvantageous in others. The endowment effect and the loss-aversion properties of the value function imply that the latter are overweighted relative to the former, so that if the benefits and costs of departures from the status quo are equal in “objective” terms the losses will dominate in the evaluation of alternatives. The result is a tendency toward status quo choices more frequently than expected-utility theory would predict. This *status quo bias* (Samuelson and Zeckhauser, 1988) is reflected in the tendencies for selling prices to exceed buying prices and for undertrading, as demonstrated in a number of experimental and field studies of consumer and investment behavior (Knetsch and Sinden, 1984; Hartman, Doane and Woo, 1991).

The status quo bias conforms to our intuitive sense of international politics: states generally seem to make greater efforts to preserve the status quo against a threatened loss than to improve their position by a comparable amount. They are sometimes willing to fight to defend the same territory that they would not have been willing to fight to acquire, or to accept greater costs in order to maintain an international regime than to create it in the first place (Keohane, 1984). Admittedly, it may not be easy to demonstrate this empirically or to measure the magnitude of the hypothesized effects, and there are some notable exceptions to the hypothesized pattern. There are also reputational considerations and other factors which might provide states with an incentive to remain at the status quo (Jervis, 1989: 29–35; Levy, 1992b: 284–285).

In fact, loss aversion may interact with some of these other factors in important ways. States may be more concerned to prevent a decline in their reputation or credibility than to increase it by a comparable amount, more worried by the costs of falling dominoes than optimistic about the gains from others bandwagoning in their favor (Jervis, 1991), so that loss aversion helps to explain asymmetries in reputational interests. There may also be domestic political reasons why decision-making elites go to considerable efforts to avoid losses. The apparent tendency for domestic publics to punish their political leaders more for strategic or economic losses than to reward them for comparable gains may itself be a function of loss aversion operating at the level of public opinion. Loss avoidance by political leaders may be a rational response to these domestic constraints.

The status quo bias is closely related to a *concession aversion* (Kahneman, Knetsch and Thaler, 1990: 1345) in a bargaining situation. Bargaining involves making concessions on some issues in return for compensation on others. Loss aversion and the endowment effect imply that actors have a tendency to treat the concessions they give up as losses and the compensation they receive from the other actor as gains and to overvalue what they give relative to what they get. As a result, there is a shrinkage in the size of the bargaining space of mutually beneficial exchanges, a greater tendency to risk the consequences of a non-agreement or deadlock in an attempt to minimize one's concessions, and a lower probability of a negotiated agreement than utility-based bargaining theory might predict.

This concession aversion is even more pronounced if an actor has additional reasons for perceiving a negotiated agreement as a loss, such as the perception that the current status quo is unacceptable. Then a negotiated settlement that is close to the status quo and that each side knew was acceptable to the other (and therefore an option with a certain outcome) would be seen as a certain loss and thus be overweighted, which would further increase the incentive to undertake excessive risks in order to avoid that loss. More generally, whenever we find perceptions of certain losses, whether defined in terms of the status quo or alternative aspiration point, prospect theory hypotheses predict tendencies toward particularly risky behavior in order to avoid those losses.

There is potentially important qualification to this asymmetry in bargaining over gains and losses. As noted earlier, loss aversion and the endowment effect are likely to be minimal in routine economic transactions or where goods are acquired for later sale rather than use (Kahneman, Knetsch and Thaler, 1991: 200). This implies that if concessions involve a "bargaining chip" and especially if the "chip" was acquired or created with that purpose in mind, the asymmetry of value attached to concessions given and compensation received is likely to be much less, so that the likelihood of a successful compromise would be larger.

On the other hand, the longer one possesses a good and the greater the effort and resources expended to acquire it, the greater its perceived value, as cognitive dissonance theory would suggest (Jervis, 1989: 169). This point may be particularly important with respect to the territorial acquisitions that result from wars; the more costly the war in human and economic terms, the greater the perceived value of the new possessions.

The underlying hypothesis running throughout this analysis is that people behave differently when the issue is the distribution of losses rather than the distribution of gains, so that how the bargainers frame the problem in terms of gains and losses is itself a critical variable. Consider a bargaining situation in which each side makes an initial offer and then is given the choice between accepting a

compromise agreement halfway between the two offers or accepting an arbitrated solution. The contrast here is between the certainty of the negotiated compromise agreement and the uncertainty of the arbitrated agreement. Our theoretical discussion implies that the likelihood of the compromise agreement being accepted depends in part on whether the two negotiators perceive it as a gain from their adversary's initial offer or a loss from their own initial offer. To the extent that they frame the compromise as a retreat from their initial offer and thus define it as a loss, they will be more willing to reject the certain loss that would result from the negotiated agreement and accept the riskier outcome of arbitration.⁹

Although less experimental work has been done on the impact of framing on bargaining behavior than on individual choice, what evidence exists provides some support for this hypothesis (Tversky and Kahneman, 1986: S262; Bazerman, 1983). Neale and Bazerman (1985) conduct an experiment in which subjects are assigned the role of management negotiators. One group of subjects is given a negative frame ("Any concessions beyond those granted will represent serious financial losses to the company") and another is given a positive frame ("Any union concessions from their current position will result in gains for the company"), but the choice problems facing each group are mathematically equivalent. Neale and Bazerman find as predicted that subjects in the negative frame (as compared to those in the positive frame) are less likely to settle for the certainty of the negotiated agreement, more likely to accept the riskier gamble of arbitration, and more likely to end up with less successful outcomes.¹⁰ Morgan and Wilson (1989) find a similar pattern in their experimental test of a spatial model of crisis bargaining in international relations.¹¹

There has been a great deal of theoretical and empirical research on the conditions under which cooperation is most likely in international politics (Jervis, 1978; Keohane, 1984; Grieco, 1990). Most of the empirical work has focused on issues related to international political economy, where the assumption that states act to maximize absolute gains is a plausible one and where the problem can often be framed in terms of the distribution of gains from greater cooperation. As Stein and Pauly (1992) suggest, however, cooperation should be more difficult when the issue involves the distribution of losses rather than gains.

The empirical case studies in the special issue of *International Journal* that Stein and Pauly edit (1992) generally support this hypothesis. Richardson (1992), for example, argues that in the Suez crisis British leaders defined their reference point as the status quo ante, treated Egypt's nationalization of the canal as a certain loss, and consequently were willing to undertake military action that risked larger losses in order to restore the status quo ante and avoid the certain loss.¹²

Stein (1992: 223) briefly examines the Israeli decision to attend the regional peace conference proposed by the United States and the Soviet Union in October 1991. Israeli leaders believed that their failure to agree to attend the conference would result in the loss of badly needed loan guarantees and a severe strain in their overall relationship with the United States. A "successful" conference might also involve losses, including some revision of the territorial status quo, but Stein argues that the Israelis chose to gamble on the uncertain outcomes of the conference rather than to suffer the certain loss of rejecting the US initiative.¹³

If all states defined their reference point in terms of the status quo and if the status quo were basically acceptable and unchanging, then loss aversion, the status quo bias, and concession aversion should reinforce stability in international politics. If all states were excessively cautious in attempting to improve their positions, there

should be fewer challenges to the status quo than we might expect on the basis of an expected-value maximization hypothesis.

The problem is that political leaders do not always perceive the status quo to be satisfactory. In those situations the framing of a choice problem around an expectation or aspiration level or other more positive reference point leaves the status quo as a certain loss that actors try to avoid through excessively risky gambles. The result is that challenges to the status quo are more common than a straightforward cost-benefit calculus might predict.

The fact that people sometimes frame around an expectation level, aspiration level, or some other point rather than the status quo suggests that the concept of the status quo bias is misspecified. The bias is really a *reference point bias*, a greater tendency to move toward the reference point than predicted by expected-utility theory. Whereas the hypothesized status quo bias is generally stabilizing in the sense that it reinforces the status quo, the reference point bias may be destabilizing whenever the reference point is higher than the status quo. This is particularly likely to occur if one or more actors perceive that its current position is deteriorating.

Perceptions of Decline¹⁴

If a state perceives itself to be in a deteriorating situation it might see the status quo as a certain loss, overweight that loss, and therefore be willing to take excessively risky actions in order to maintain that status quo against further deterioration or perhaps to recover recent losses. This problem gets little attention in the experimental literature, which deals almost exclusively with static choice problems, but it is a common and important phenomenon in international relations.

In a crisis situation loss aversion might lead states to take preemptive action and accept the risks inherent in initiating war if they were certain that the adversary was about to initiate a first strike, even though a standard cost-benefit calculus might call for restraint (Jervis, 1989: 171). Or states might prefer to take a risky action rather than suffer the loss of credibility that they expect to follow a policy of inaction. Loss aversion and risk seeking to recover sunk costs help to explain why states continue to follow failing policies far longer than a standard cost-benefit calculus might predict (Jervis, 1992), as illustrated by the American intervention in Vietnam and the Soviet intervention in Afghanistan. States may also take disproportionately risky action short of war. Ross (1984: 247) concludes that although Soviet leaders tended to be risk-averse, they were willing to engage in the "use of decisive and perhaps risky action far more readily for *defending* as opposed to *extending* Soviet gains."

Gains and losses need not be defined exclusively or even primarily in terms of a state's international security and influence, for state officials are also concerned about their domestic political positions. They may take forceful action against external enemies in order to secure a diplomatic or military victory that might pacify their domestic critics or otherwise distract attention from domestic problems. The temptation toward such diversionary action may be enhanced by risk acceptant attitudes in the domain of losses created by a deteriorating domestic situation (Levy, 1989a: 274). The combination of perceived external decline and internal insecurity may be particularly conducive to risk seeking, as McDermott (1992) shows in her case study of the US decision to attempt a hostage rescue mission in Iran in 1979.

The prospect of even small losses may be sufficient to induce risk-seeking behavior, particularly if the losses are perceived to be certain. A setback might be minor compared to a state's overall position, but because it is evaluated in terms of deviations from a reference point rather than the net asset position its effects can be quite substantial. Moreover, because of the anticipation that any such setback will involve significant reputational costs, falling dominoes, and a disproportionate domestic political reaction, even small losses appear to have significant consequences. Consequently, political leaders may be inclined to engage in relatively risky behavior in order to avoid or recoup even small losses or retreats from the status quo (Jervis, 1989: 170).

The destabilizing tendencies of loss aversion might be particularly great if two adversaries both perceive themselves to be in a deteriorating situation. This could occur because the opposing political leaders perceive the situation differently; because they focus on different dimensions of power, geographical systems, or time frames; or because one set of political leaders focuses on their state's relative external decline while the other focuses on their deteriorating domestic situation. If mutually perceptions of losses occur, loss aversion might drive both toward riskier strategies than warranted by straightforward cost-benefit calculations. I have suggested that this may have been the situation for France and Germany in 1870, and perhaps also for the United States and Japan in 1941 (Levy, 1987: 93). It might also have been true for the United States and Iraq in 1990/91: the United States feared Iraq's acquisition of nuclear and biological weapons, and Iraq may have feared a deterioration of its position in the context of Soviet decline, unconstrained American hegemony and its hostility toward Iraq, and the possibility of a diplomatic realignment in the Middle East.

Actors' simultaneous representations of their respective choice problems as those involving the domain of losses and the mutual risk seeking tendencies associated with it can also be induced by the effects of framing in a changing situation. States might identify different reference points to frame their respective decisions and this might lead them all to perceive that they are defending the status quo. Consider a situation in which state A has just made a tangible gain at state B's expense, say through the seizure of territory. The endowment effect suggests that A will accommodate to its gains much more quickly than B will accommodate to its losses. Consequently, B will attempt to recover its losses and restore the old status quo and A will attempt to maintain the new status quo against B's encroachments. Each will accept larger than normal risks in order to maintain its version of the status quo.

This behavior leads Jervis (1989: 171) to suggest that a *fait accompli* strategy is more dangerous than George and Smoke (1974: 536–540) imply because the target will make a greater effort to recover its loss than might be expected on the basis of a straightforward calculation of costs and benefits. Possible illustrations of this might include Britain's resolve to recover the Falklands after their seizure by Argentina in 1982, and the American/Allied determination to roll back Iraq's invasion of Kuwait in 1990/91. It is interesting in this regard to consider whether Khrushchev and the rest of the Soviet leadership viewed their withdrawal of missiles from Cuba as a return to the status quo or a retreat from it. The former would have been easier in psychological terms. Of course, if the initiator conceives of its *fait accompli* as an attempt to recover old possessions rather than make new acquisitions, its resistance will be all the greater, as evidenced by Argentina's determination to recover the Falklands.

The changes that induce these framing effects may be gradual rather than sudden. Consider a situation in which A is slowly gaining in power at the expense of B and the two states try to negotiate a settlement over a conflict between them. It is possible that A might frame its reference point at some future asset level based on the assumption of the continued improvement in its position, treat any point short of that aspiration level as a loss, and be willing to undertake inordinately risky actions to reach its target position. Meanwhile, B is likely to use the current status quo as the reference point and to be risk seeking in order to maintain it.

Deterrence and Compellence

The framing of a decision problem can also affect behavior with respect to deterrence and other forms of bargaining. Loss aversion helps to explain why influence attempts based on coercion are more likely to be successful if the target sees itself in the domain of gains and is contemplating an effort to improve its position, than if it sees itself in the domain of losses and is considering how to prevent its position from deteriorating further (Lebow and Stein, 1987). That is, it is easier to deny the adversary a gain rather than to force the adversary to suffer a loss. It is also easier to deter an adversary from initiating an action not yet taken (and thus deny him a gain) than to compel him to do something he does not want to do, to stop doing something he is already doing, or to undo something he has already done (each of which is likely to be framed as a loss) (Schelling, 1966: 69–91; Jervis, 1989: 29n).

The issue of deterrence leads to another interesting question relating to framing. When states issue deterrent threats, it is often in response to prior threats by a potential initiator. The initial threat of military action in itself changes the status quo in terms of utilities because of the reputational and perhaps domestic political costs involved. What happens if the state making the threat is then confronted by a counter-threat from the target or the target's protector? Does the first state frame a possible withdrawal of the threat (or failure to implement it) as a retreat *to the old* status quo or a retreat *from the new* status quo? (Levy, 1989b: 126–127). The second frame is more likely to induce risk-seeking behavior and the escalation of the conflict along the lines that Brecher suggests in his Introduction, this issue.

Conclusion

Prospect theory is a significant theoretical innovation that was developed to account for behavior that repeatedly and systematically deviates from expected-utility theory. It is based on a different set of assumptions and generates a different set of hypotheses about conflict, crisis and war than do rational choice theories. Prospect theory provides different answers to some of the same questions and in addition suggests a new set of questions to investigate, such as the impact of framing on state foreign policy choices.

Although prospect theory advances plausible interpretations of a number of significant patterns of behavior in international relations, a great deal of theoretical and empirical research needs to be done before we can be confident that prospect theory constitutes a generalizable and empirically valid theory of behavior. On the theoretical level a critical task is to specify the individual, institutional and environmental factors that influence how individuals identify the reference point around which they frame their choice problems. As emphasized above, prospect theory offers no theory of framing. On the empirical level the primary task

is to develop research designs that facilitate the determination of how an actor frames a choice problem. Unless actors' reference points can be empirically identified independently of the choices which are hypothesized to follow from framing, loss aversion and risk orientation, prospect theory can provide little explanatory power.

It is important to emphasize that prospect theory is a theory of *individual decision* and that consequently it is incomplete as a theory of international politics. What we ultimately need are theories that explain how individual decisions driven by framing, loss aversion and probability weighting get aggregated into collective decisions for the state through the foreign policy process, and how the decisions of strategically interdependent states interact within the larger international system. That is, the insights of prospect theory need to be subsumed within a larger theory of foreign policy and also within a larger theory of strategic interaction and international politics.

Notes

1. The probabilities of all possible outcomes are known under conditions of risk, not completely known under conditions of uncertainty, and known to be either zero or one under conditions of certainty.
2. The following discussion builds on my more extensive summary of prospect theory (Levy, 1992a). See also Tversky and Kahneman (1986) and Kahneman and Tversky (1979).
3. The assumption that the impact of deviation from a reference point is relatively insensitive to the level of wealth or assets is probably not valid for "ruinous" losses or for other threshold effects that reflect special circumstances (Kahneman and Tversky, 1979: 278–279).
4. The sellers have the option of keeping the mug and the buyers have the option of keeping an equivalent amount of money. This two-to-one ratio of selling prices to buying prices is typical, though sometimes it is as high as three- or four-to-one (Knetsch and Sinden, 1984; Knetsch, 1989; Kahneman, Knetsch and Thaler, 1990: 1336; Hartman, Doane and Woo, 1991: 142).
5. Although there is no conclusive evidence as to the specific point at which overweighting shifts to underweighting or whether this point varies significantly across individuals or conditions, preliminary evidence suggests that it falls in the .10–.15 range (Hershey and Schoemaker, 1980).
6. Potentially important sources of framing in international relations include emotional states (Farnham, 1992) and historical analogies (McDermott, 1992; Levy, 1994; Taliaferro, 1994).
7. This possibility is frequently ignored in recent discussions of prospect theory in political science. This is particularly serious in international relations, where choices arise fairly often involving possible outcomes with small probabilities but large consequences.
8. Note that these are precisely the conditions under which people engage in gambling and buy insurance. Prospect theory provides a straightforward explanation of both these phenomena, whereas expected-utility theory cannot easily explain both gambling and the purchase of insurance by the same person.
9. Important here is the assumption that the expected value of the arbitrated outcome is lower than that of the negotiated outcome, due to such arbitration costs as time delays, arbitration fees, loss of control over the outcome, etc., (Crawford, 1979; Neale and Bazerman, 1985: 37). One parallel to arbitration in international crisis bargaining is war, which is more costly than a negotiated agreement that produces the same political settlement.
10. Neale and Bazerman (1985) also show that the likelihood of a subject selecting the riskier arbitrated settlement depends also on his degree of confidence in being able to predict

the outcome of arbitration. This parallels the tendency among political leaders to overestimate the probability that their own coercive threats will induce compliance by the adversary or that they can defeat the adversary in war if the crisis escalates.

11. Subjects sought agreement when the payoffs were positive but were more likely to risk war when the payoffs were negative, although in each case the preferred outcome had a lower expected value than the alternative. For an interesting experimental study of Israeli attitudes about giving up the Golan Heights (a loss), as opposed to returning them to their Syrian owners (a foregone gain), see Mintz and Geva (1994).
12. Richardson (1992) concedes that the British greatly underestimated the probability that the United States would oppose the operation and thus "dismissed the risks of using force." This appears to fit an expected-utility hypothesis based on the minimization of losses as well as a loss aversion hypothesis.
13. Note that Stein's argument, along with some others in the Stein and Pauly collection, differs in an important respect from the Neale and Bazerman (1985) and Morgan and Wilson (1989) studies. In the Stein and Pauly studies it is the absence of agreement that is defined as the certain outcome. In the Neale and Bazerman (1985) study it is the agreement the bargainers know they can reach with each other that provides the certain outcome, so that the combination of loss aversion and the overweighting of certain outcomes leads actors to try to avoid the certain loss inherent in agreement by opting for the risky alternative instead.
14. This section builds on Levy (1992b).

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