CHAPTER 2

Prospect Theory

Prospect theory is a theory of decision making under conditions of risk. Decisions are based on judgments. Judgments are assessments about the external state of the world. They are made especially challenging under conditions of uncertainty, where it is difficult to foresee the consequences or outcomes of events with clarity. Decisions involve internal conflict over value trade-offs. They are made difficult when choices promote contradictory values and goals. Prospect theory directly addresses how these choices are framed and evaluated in the decision-making process.

This chapter provides the theoretical basis for the empirical casework that follows. First of all, there is a brief reference to rational choices theories in terms of the historical foundations from which prospect theory emerged. These theories are mentioned here because rational choice theories constitute a better known approach in political science and often represent the dominant alternative model for explaining the behavior under investigation here. The rational choice discussion is brief and simple because rational choice models are not the main concern of this work. The objective is not to test the predictions of prospect theory against those of rational choice models. Rather, this outline is provided as a basis of comparison to examine the explanatory and predictive value afforded by prospect theory. Second, prospect theory itself is then discussed in detail in order to place the theory in its appropriate psychological and political context. Last, the applicability of prospect theory to international politics is discussed, and some definitions, issues of operationalization, and a brief outline of the case studies that follow are offered.

Historical Context

Expected value was one of the first theories of decision making under risk. The expected value of an outcome is equal to its payoff times its probability. This model failed in predicting outcomes in many instances because it was obvious that the value that a particular payoff held for someone was not always directly related to its precise monetary worth.

Daniel Bernoulli was the first to see this contradiction and propose a

modification to the expected value notion in 1738.[1] In fact, Bernoulli was the first to introduce the concept of systematic bias in decision making based on a "psychophysical" model.[2] Specifically, Bernoulli used a coin toss game known as the St. Petersburg paradox to demonstrate the limitations of expected value as a normative decision rule. While the specifics of the game are complex and irrelevant to this study, Bernoulli's analysis of the dynamics of the St. Petersburg paradox led him to appreciate that the subjective value, or utility, that a payoff has for an individual is not always directly related to the absolute amount of that payoff, or expected value. Rather, the value a person attaches to an outcome can be influenced by such factors as the likelihood of winning, or probability, among other things. In this way, Bernoulli showed that people would not always bet solely on the basis of the expected value of a game.

Out of his analysis, Bernoulli proposed a "utility function" to explain people's choice behavior. Bernoulli assumed that people tried to maximize their utility, and not their expected value. Bernoulli's function proposed that utility was not merely a linear function of wealth, but rather a subjective, concave, evaluation of outcome. The concave shape of the function introduced the notion of decreasing marginal utility, whereby changes farther away from the starting point have less impact than those which are closer to it. For example, Bernoulli's utility function argues that $1 is a lot compared with nothing; people will therefore be reluctant to part with this dollar. However, $101 is not significantly different to most people than $100. Thus, people are more willing to part with their hundred-and-first dollar than with their only one.

Because Bernoulli's concave utility function assumed that increments in utility decreased with increasing wealth, the expected utility model implicitly assumed risk aversion. Specifically, Bernoulli argued that a person would prefer a sure outcome over a gamble with an equal expected value. In other words, people would prefer $100 for sure over a gamble that paid $200 or nothing on the toss of a fair coin.

Bernoulli's model was the beginning of utility theory. As such, it combined a mixture of descriptive and normative elements. The description seemed sensible, and the normative implications merely represented the idea that caution constituted the better part of prudence. To the extent that Bernoulli assumed that people are typically risk averse, he explained this behavior in terms of people's attitudes toward the value of the payoff, rather than in terms of the phenomenon of risk-taking behavior itself. People's attitudes toward risk were posited as a by-product of their attitude toward value.

Two centuries later, von Neumann and Morgenstern revolutionized Bernoulli's expected utility theory by advancing the notion of "revealed

preferences."[3] In developing an axiomatic theory of utility, von Neumann and Morgenstern turned Bernoulli's suppositions upside down and used preferences to derive utility. In Bernoulli's model, utility was used to define preference, because people were assumed to prefer the option that presented the highest utility. In the von Neumann and Morgenstern model, utility describes preferences; knowing the utility of an option informs an observer of a player's preferences. Von Neumann and Morgenstern's axioms do not determine an individual's preference ordering, but they do impose certain constraints on the possible relationships between the individual's preferences. In von Neumann and Morgenstern's theory, as long as the relationship between an individual's preferences satisfies certain axioms such as consistency and coherence, it became possible to construct an *individual* utility function for that person; such a function could then be used to demonstrate a person's pursuit of his maximum subjective utility. This shift in utility theory toward revealed preferences allowed room now for different people to have different preference orderings.[4]

In von Neumann and Morgenstern's model of subjective expected utility, there is no clear distinction between normative and descriptive aspects. As mentioned, Bernoulli combined these elements, because risk aversion was assumed to offer prudent counsel. In von Neumann and Morgenstern's model, it was assumed that axiomatic subjective expected utility is not only the way rational people should behave, but do behave. People seek to maximize their subjective expected utility; one person may not share the same utility curve as another, but each follows the same normative axioms in striving toward their individually defined maximum subjective expected utility.

The crucial axioms in subjective expected utility models are transitivity, dominance, and invariance. Transitivity assumes that if option A is preferred to option B, and B is preferred to C, then A is preferred to C as well.[5] Dominance argues that if one option is better on at least one aspect, and at least as good on all other aspects, it will be preferred to lesser options. Invariance posits that a preference should remain unchanged regardless of order or method of presentation. All three of these axioms are basic to almost any rational model of decision making. All of these assumptions seem logically correct, and yet people demonstrate systematic violations of all of them in actual choice behavior. This is one of Tversky and Kahneman's crucial findings.[6]

Prospect Theory

Tversky and Kahneman have demonstrated in numerous highly controlled experiments that most people systematically violate all of the basic

axioms of subjective expected utility theory in their actual decision-making behavior at least some of the time.[7] These findings run contrary to the normative implications inherent within classical subjective expected utility theories. In response to their findings, Tversky and Kahneman provided an alternative, empirically supported, theory of choice, one that accurately describes how people actually go about making their decisions. This model is called prospect theory.[8] In short, prospect theory predicts that individuals tend to be risk averse in a domain of gains, or when things are going well, and relatively risk seeking in a domain of losses, as when a leader is in the midst of a crisis.

Prospect theory is based on psychophysical models, such as those that originally inspired Bernoulli's expected value proposition. Traditionally, psychophysics investigates the precise relationship, usually mathematically expressed, between the physical and the psychological worlds. The goal is to determine the point at which a change in the physical stimulus is psychologically perceived as a sensory change by the subject. Most research in the sensory domain, for example, has determined that physical stimulus must increase geometrically for psychological experience to increase arithmetically; this produces a concave curve, much like Bernoulli's risk-averse utility curve.[9]

Tversky and Kahneman applied psychophysical principles to investigate judgment and decision making. Just as people are not aware of the processing the brain engages in to translate vision into sight, they are not aware of the kinds of computations the brain makes in editing and evaluating choice. People make decisions according to how their brains process and understand information and not solely on the basis of the inherent utility that a certain option possesses for a decision maker.

Much of Tversky and Kahneman's work is designed to show that descriptive and normative theories cannot be combined into a single, adequate model of choice, as von Neumann and Morgenstern attempted to do with their axiomatic subjective expected utility model; rather, the behavioral violations of expected utility in which people systematically engage are too basic to allow for integration within the axioms demanded by normative models. In short, theories that are empirically accurate in description fail to meet even the most basic normative prescriptions. Thus, Tversky and Kahneman ultimately argue that normative theories need to be abandoned altogether in analyzing judgment and decision making because they fail to offer an adequate understanding of actual decision behavior.[10]

Prospect theory shares certain characteristics with previous notions of expected utility. Like Bernoulli, the value function of prospect theory assumes that the *shape* of the curve is similar for everybody. Like von Neumann and Morgenstern, prospect theory recognizes that the curve is

not a straight line and that the *utility* of that curve can differ between individuals. Despite these similarities, however, prospect theory is not merely a descendant of earlier utility models.

In classical decision models, utility is understood to exist independent of probability. In games of chance, subjective utility is typically defined as the point of indifference between a sure thing and a hard lottery. For example, a given player's subjective utility might lie at the point where he has no discernible preference between receiving $50 for sure and a gamble with a 50 percent chance of winning $200 and a 50 percent chance of winning nothing. As a result, subjective utility might differ across individuals for the same payoff matrixes. Subjective utility is used to "find out" the worth of any given objective outcome to a particular individual. In short, utility is the value an individual places on a given outcome. In this way, calculations of subjective expected utility serve to define "revealed preferences."

What does this mean in practical terms? How do these decision strategies play out in real life questions? An example might be illustrative. Imagine a classical decision analyst who wants to find out how much an industry would have to "pay" (in taxes, improved safety standards, and so on) in order to increase pollution in an area by a factor estimated to be one additional death per year from cancer, on average. The first thing such an analyst might do is seek to determine how much life is worth to people in that area. In this example, a classical decision analyst undertaking such a task might ask someone to place an objective value on the relevant outcome, their life. So, the analyst might ask the subject, "what is your life worth to you, in monetary terms?" An individual asked such a question would most likely balk at even attempting to think about the value of his life in terms of money unless he was an advocate of such classical decision models beforehand. Even a naive subject who wished to be cooperative might have a hard time figuring out how to think about even beginning to translate the value of his life into monetary terms. If such a person asked the analyst for help in making this transition, the decision analyst might say, attempting to be helpful: "How did you get here today? Did you drive? Don't you realize that you risked your life by approximately 1 in 50,000 per year by driving here in your car today? If you are willing to risk your life for mere transport, what is so difficult about translating that value into monetary terms?" At this point, the subject may be less confused, but will certainly be more depressed and probably angry at the decision analyst as well for making him think about his life so callously. Thus, even in this simple example, it is possible to see some of the difficulties that naive subjects might encounter in determining utility. Yet some of these same obstacles are frequently present for many analysts who attempt to

accurately apply classical decision models to difficult, personal, or otherwise highly evocative and important questions. Even under more mundane circumstances, people still find it fairly complex to assess utility at all, challenging to understand its implications for everyday behavior, and even more difficult to translate these values into monetary, or similarly objective, terms.

Thus, it is possible to see that people often fail in the most basic requirements of subjective expected utility theory, namely providing accurate and reliable assessments of utility. Because it is so very difficult for people to assess utilities, analysis rests on a much stronger foundation when it redefines utilities on the basis of psychological theory and experimentation, such as that provided by prospect theory.

In this way, prospect theory advances the notion of utility in a useful and accurate direction. Prospect theory adds the insight that utility curves differ in domains of gain from those in domains of loss. Moreover, the shape of prospect theory's value curves are similar across individuals. As a result, an analyst need not know an individual decision maker's particular utility in each case; once the domain is clear, predictions of risk propensity become possible regardless of the individual decision maker's particular utility. Thus, while prospect theory may appear to be less analytically rigorous and precise than expected utility models, it is in fact sufficiently precise to allow for prediction on the basis of whether a decision takes place in the domain of gains or losses. Analytically, prospect theory is also more adaptable than a subjective expected utility model that would require greater information about the *individual* utility curve before prediction would become possible.[11]

Prospect theory is designed to explain a common pattern of choice. It is descriptive and empirical in nature. Prospect theory looks at two parts of decision making: the editing, or framing, phase, and the evaluation phase. The editing phase encompasses what are widely known as framing effects. The evaluation phase involves the decision process of choosing among options; this decision is influenced by two processes, one related to subjective value, the other to perceptual likelihood. The following section looks at these three processes in more depth.

Framing Effects

Framing, or editing, is the first phase of prospect theory. This initial phase leads to a representation of the acts, outcomes, and contingencies that are associated with a particular choice problem. Framing involves a number of basic operations that simplify and provide a context for choice.

Framing effects refer to the way in which a choice, or an option, can

be affected by the order or manner in which it is presented to a decision maker. This is a crucial concept for a number of reasons. In many situations, a decision maker does not know the relevant options that are available to her. She must construct and figure out what the options are or have this done for her prior to choice. In some sense, this activity of determining and constructing the available options constitutes the heart of creative decision making.

Choice can be affected by relatively trivial manipulations in the construction of available options. Most rational decision makers would argue that seemingly innocuous transformations, such as the order in which options are presented, should *not* substantively affect their choice decisions. The paradox is that framing effects are often embedded in decision problems in such a way that few decision makers realize the disproportionate impact that these framing effects have on them. Decision makers frequently remain unaware of these framing effects and resort to intuitive assessments of predetermined options because it is often impossible for them to recognize the way in which more rational procedures are being violated in the original determination of these preframed options. Thus, any descriptively adequate model of choice must be sensitive to these framing effects.

A couple of examples serve to illustrate the impact of framing on choice. In most of the experiments that demonstrate these phenomena, money, in the form of payoffs, bets, and gambles, is used to demonstrate the findings. However, in the case of framing, it has been shown that decisions about life and death are affected as readily and as profoundly as decisions about money. Two experiments serve to demonstrate these findings.

The first experiment asked people to pretend that they were responsible for making public policy in the face of a major flu epidemic that was expected to kill 600 people. They were asked to decide between two different programs that were each designed to contain this epidemic. The choices were presented to the first group as follows: policy A will save 200 people; policy B has a one-third chance that 600 people will be saved, and a two-thirds chance that no one will be saved. In this case, 72 percent chose the *first* option. The second group was presented with these choices: policy A will cause 400 people to die; policy B has a one-third chance that no one will die; and a two-thirds chance that 600 people will die. In this case, 78 percent chose the *second* option. When these two option sets are compared, it is obvious that they present the exact same "net" outcome; the only difference lies in the framing of the options. Clearly, the discrepancy in results can only be attributed to framing effects, since there was no change in the expected value between the options presented.[12]

In another example, physicians were asked whether they would treat

lung cancer with radiation or surgery. In one condition, doctors were told that surgery carried a 90 percent immediate survival rate, and a 34 percent 5-year survival rate. In this experiment, subjects were told that all patients survived radiation, and that 22 percent remained alive after 5 years. In a second condition, respondents were told that 10 percent of patients die during surgery and 66 percent die by the end of 5 years. With radiation, no one dies during the therapy, but 78 percent die within 5 years. Once again, the two choice sets differ only in the way the problem is presented, or framed, to decision makers. Again, the results are strikingly different across options. In the first, "survival," frame, 18 percent chose radiation; in the second, "mortality," frame, 49 percent chose radiation.[13] This example is particularly striking because it involves real choices concerning life and death outcomes. Moreover, when the options are presented side by side, it is obvious that an individual attempting to maximize his or her long-term expected value is best served by surgery. What is also noticeable in both examples is that in each case, when the alternatives are placed side by side at the same time, the optimal choice is rendered transparent.

What does framing consist of and how does it operate? Tversky and Kahneman write, "Framing is controlled by the manner in which the choice problem is presented as well as by the norms, habits, and expectancies of the decision maker."[14] These norms and habits can be quite idiosyncratic to the particular decision maker, and his expectancies can be significantly affected by many cognitive biases. However, framing operations concerning the *manner* in which choice problems are presented can be described systematically.[15]

The purpose behind framing, or editing, various options, is to simplify the evaluation of choices that are available to a decision maker. This editing is done through the use of several kinds of procedures, the most important of which are acceptance and segregation, but also including such mechanisms as coding, combination, and cancellation.

In recent expositions of prospect theory, Tversky and Kahneman have further distilled the essence of framing effects to two basic functions: segregation and acceptance.[16] Acceptance argues that once a decision maker is presented with a reasonable construction of a choice problem, she is not likely to recast it. In other words, a decision maker is most likely to accept whatever framing of options is presented as the most appropriate formulation of the given decision and not be prone to second-guess the presentation of choices. There are a few exceptions to this rule, as when there is a particularly familiar way to construct an option. For example, it is customary to discuss "unemployment" figures, not "employment" ones. Nonetheless, these familiar presentations become less common as the choice becomes more novel in nature. Note the opportunity such accep-

tance offers for a manipulative political advisor or rival to obtain personal gains through the mere control of the choice options that are presented as viable.

Segregation is best captured by the idea that when people make choices, they tend to focus on the factors at hand that seem most relevant to the immediate problem; decision makers do not tend to adequately account for related factors that may have an actual impact on the outcome but do not appear to be directly relevant to the specific choice at hand. With the flu experiment, for example, not many decision makers faced with such a choice would first ask about the overall probability that this flu might not take hold in this population at all. While seemingly irrelevant to the decision about what to do if it does arrive, the overall probability of how likely it is that the flu will hit is not inconsequential in determining how much should be spent to combat it before an epidemic occurs.

Coding refers to people's tendency to categorize outcomes in terms of gains and losses, rather than in terms of final absolute states of wealth or welfare. This is intuitive to any fan of competitive sports. Your team's final score is irrelevant without knowing whether it is higher or lower than the opponent's score. In this case, the opponent's score serves as the reference point by which to evaluate your team's performance. In the end, it doesn't matter whether it was your team's highest score ever, if the total is still less than the other team's score.[17]

Combination is an editing strategy that refers to the tendency of people to add together the likelihood of choices that present identical outcomes. For example, if a person lives in a part of the country with a 10 percent chance of dying in an earthquake and a 10 percent chance of dying in a fire in a given year, that person will evaluate potential moves to a part of the country with a 10 percent likelihood of dying in a tornado assuming a 20 percent chance of dying in an earthquake or fire by staying in the same place.

Cancellation refers to the discounting involved in evaluating choices that carry similar outcomes. If one part of an option is the same across choice sets, that aspect tends to be ignored in evaluating prospects. For example: one route home carries a 1 percent chance of being injured in a car crash and a 10 percent chance of being killed by a gunman; another route home carries a 10 percent chance of being killed by a gunman and a 20 percent chance of being mugged. The likelihood of being killed by a gunman is then ignored, in essence, because it is the same across cases, and the decision then becomes one between a 1 percent chance of injury in a car accident and a 20 percent chance of being held up. The similar option is canceled out for purposes of choice between options.

Other editing operations include simplification and detection of dom-

inance. Simplification refers not only to mathematical rounding of probabilities but discarding very unlikely alternatives as well. Detection of dominance reflects the almost unconscious habit of dismissing alternatives that provide a less valuable outcome on each dimension than other alternatives that are available.

Because editing makes decision making more efficient, it occurs frequently. However, the order in which these various operations take place can differ, and the sequence of processing itself might easily affect the outcome of the evaluation process. Once an option is canceled, it may not reappear later to be coded as a gain or loss, even if the context changes to make the canceled option viable once again. For example, if a person makes a decision not to pursue a graduate education because he doesn't have enough money, coming into a subsequent financial windfall in the wake of a wealthy relative's death may not prompt an immediate reevaluation of the earlier education option, because this prospect had been previously canceled from consideration. In this way, sequencing of framing processes can affect final options by altering the initial context in which the choices are presented.

These editing operations, which constitute the framing of a problem, are important because of the way in which they can affect choice. Coding alone can determine the relevant reference point and help to define the outcomes, acts, and contingencies associated with a choice. Merely by including some and excluding other options from consideration, the process of framing itself creates the very choices that are understood to be available to a decision maker at a given time.

While the implications of framing for risk perception and assessment will be examined in greater detail below, a couple of examples at this point prove illustrative. People engage in unconscious coding and framing all the time. Advertising, in some sense, is little more than structuring the presentation of a product within a context designed to highlight its superiority over competitive options in the most memorable and salient way. To do this, the advertiser must frame his product within an image that will be readily invoked in a purchase context and that will remind the consumer why this particular product is better than the competition, because of price, status, quality, or whatever aspect is considered advantageous, given market research. In a more personal domain, people constantly frame information they receive and persuasions they attempt, often without even being aware of it. Oftentimes, gossip people hear is framed in terms of its source, because the source may have something to gain by harming the reputation of the person being discussed.

What are the political implications of framing? Choice can be manipulated by the order and presentation of the options available, without

changing the substantive content of the information. In this way, framing becomes a powerful mechanism by which influential advisors can structure the choices, and thus influence the decisions, of decision makers.[18] Manipulation of framing can have profound effects on outcome, and therefore sophisticated practitioners can invoke these effects to their strategic advantage.[19] In this way, framing can bias decisions in systematic and predictable ways. For example, it may be possible to frame a favored option in the most positive terms, or to position a preferred option against much less desirable choices without including more attractive options for consideration. This can be done in simple and subtle ways: favored options are enhanced by easy comparison; nonfavored options are helped by complicated comparison; additional options hurt similar choices more than different ones; and so on.[20]

Framing demonstrates the process by which certain prospects become labeled as potential options while others are disregarded from consideration. Indeed, there may be a systematic bias in the kinds of prospects that are elevated to the status of seriously considered options; if this is so, such additional biases in the decision-making process become worthy of attention and possibly intervention.

Why is it that framing effects are considered to be counternormative? The primary reason is that frame changes can elicit changes in preference that violate rational choice theories requiring axioms of invariance to operate. With framing effects, people will make different choices based *solely* on the order of presentation. In other words, the same decision can elicit different choices depending on how the question is framed;[21] this finding is in total contradiction to any normative theory of decision making. What is more, if people are shown that they were influenced by framing effects, they agree that they should not have been so affected by them.

From the perspective of normative decision making, these findings are disturbing. As Tversky and Kahneman write:

> [D]ecisionmakers are not normally aware of the potential effects of different decision frames on their preference . . . Individuals who face a decision problem and have a definite preference (i) might have a different preference in a different framing of the same problem, (ii) are normally unaware of alternative frames and of their potential effects on the relative attractiveness of options, (iii) would wish their preferences to be independent of frame, but (iv) are often uncertain how to resolve undetected inconsistencies . . .
>
> Further complexities arise in the normative analysis, because the framing of an action sometimes affects the actual experience of its outcomes . . . The framing of acts and outcomes can also reflect the

acceptance or rejection of responsibility for particular consequences, and the deliberate manipulation of framing is commonly used as an instrument of self-control. When framing influences the experience of consequences, the adoption of a decision frame is an ethically significant act.[22]

In short, although people believe that their decisions should not be affected by simply changing the frame of the decision problem, they are manipulated by framing effects nonetheless.[23]

Two important points should be emphasized. One is that framing can be a purely cognitive constraint. Once people recognize their failure of invariance, they often agree that their decisions *should have* been made independent of the framing of the problem. So framing is not necessarily a motivated phenomenon, but can be a purely cognitive occurrence. In other words, it is a psychophysical property of choice.[24]

Second, from the perspective of intervention designed to reduce or prevent such undesired framing effects, choice should be presented to others, or to oneself, from a variety of frames simultaneously in order to help determine the most accurate and consistent preferences.[25] If the same problem is presented at the same time, framed in a couple of different ways, it is possible to recognize the impact of framing effects in a more transparent way. This was noticeable in the experimental findings, presented earlier, about choosing between radiation and surgery in the treatment of lung cancer.[26] Once the choices were presented side by side, in both survival and mortality terms, the better long-term survival strategy of surgery became obvious. Such a strategy of simultaneous presentation might render framing effects more transparent and thus reduce the extent to which a decision maker is influenced by them, without knowledge or desire.

One of the methodological quandaries in attempting to document the impact of framing effects on choice is the difficulty of predicting how people will choose to frame any given issue or choice, given the myriad of possible alternatives. Fischhoff experimented with predicting frames by arguing that "in order to predict behavior in less controlled situations, one must be able to anticipate how problems will be represented and what frames people will use to represent them."[27] Fischhoff's experiment met with little success outside the robust finding that "people do not readily adapt to absorbing losses."

Fischhoff explains his difficulty in predicting frames by noting individuals' inability to introspect accurately about what factors affect their choices and decisions. Much experimental evidence demonstrates that although people may be able to generate reasons after the event for why

they behaved in a particular way, they may not recognize the real factors that control their behavior while they are in the situation itself.[28] Simple introspection confirms the intuition that it is more difficult for people to predict than explain their own, or others', behavior. However, once a person generates an explanation for his behavior, he is very likely to then believe that the explanation is an accurate one.[29]

Fischhoff argues that his experiment failed to elicit the desired result because the research methodology he used was not the most effective way of predicting frames. While his findings are discouraging from a predictive standpoint, it may be that more substantive knowledge about a particular decision maker's history or goals might help to predict frames more accurately. In the cases that follow, it becomes clear that historical analogies play an important role in determining the framing of an issue for many decision makers. Information on the particular historical analogies that are invoked by a leader in explaining behavior can often provide clues as to how the issue is being framed by that person.

Cases that analysts are most interested in *explaining* are also the ones that are most difficult to *predict* in general, regardless of whether one is using a psychological or a rational choice model.[30] The surprise with which almost every analyst greeted the demise of the Soviet Union and the end of the cold war is proof enough of the difficulty of predicting even very large scale and terribly important occurrences. While it may be possible to explain such events post hoc, it appears more challenging to predict behavior beforehand, regardless of the model that is used to generate such predictions.

Framing is important not only because of its direct influence on the choices available, but also because of its indirect effect on choice, through the value and weighting functions of prospect theory. These functions are part of the second, evaluation, phase of prospect theory.

Value Function

Once prospects are edited, or framed, the decision maker evaluates these options and makes a choice among them. The evaluation phase of prospect theory encompasses two parts, the value function and the weighting function. The proposed value function is illustrated in figure 1.

This value function has three crucial characteristics. The first is that it is defined in terms of gains and losses relative to the reference point, not in terms of final absolute wealth or welfare. This is quite different than expected utility theory, which assumes that the final asset position is definitive in calculating subjective utility and predicting choice. Emphasis on change from the reference point in prospect theory is in keeping with

basic human perceptual processes, which tend to notice shifts more than resting states. In prospect theory, value is a function of this change, in a positive or negative direction, rather than a result of absolute welfare, as is the case with subjective expected utility theory. This focus on change emphasizes the importance of the starting point, which in prospect theory is referred to as the reference point. Change is evaluated relative to that position, but value itself derives from the difference between that starting, or reference, point and the amount of any positive or negative shift away from it; again, this differs from expected utility theory, which considers value to derive exclusively from final states, and not the magnitude or direction of change from the status quo.[31] Recall the psychophysical analogue for the evaluation of change in prospect theory. Just as perception of sound or light is more sensitive to change than static intensity, so are assessments of welfare more reactive to change than absolute outcome in prospect theory.

The second important aspect of an S-shaped value curve is that it *is* S-shaped; that is, it is convex below the reference point and concave above it. In practical terms, the status quo typically serves as the operative reference point.[32] To be clear, the right-hand side of the graph refers to the domain of gains; the left-hand side of the graph represents the domain of losses. The slope measures the sensitivity to change; the curve is maximally sensitive to change nearest the origin and progressively less sensitive as it moves away from this reference point. Thus, for any given change, there is more impact closer to the starting point than farther away from it.

This finding is intuitively confirmed by the observation that the difference between $10 and $20 has more psychological impact than the same

ten-dollar increase from $1,110 to $1,120. This decreasing marginal utility reflects a general psychophysical principle concerning the evaluation of outcomes, whereby comparable changes have a greater impact closer to the steady state of adaptation than farther away from it.

In theoretical terms, the S-shaped curve means that people tend to be risk averse in the domain of gains and risk seeking in the domain of losses; this is the crux of prospect theory. In short, prospect theory predicts that domain affects risk propensity.

The third aspect of the value function is the asymmetric nature of the value curve; it is steeper in the domain of losses than in that of gains. This implies relative loss aversion. In other words, losing hurts more than a comparable gain pleases. For example, losing ten dollars hurts more than finding ten dollars gratifies. In fact, loss aversion is intimately related to research on the phenomenology of happiness.[33] Individuals are understood to adapt to the steady state, or status quo, relatively rapidly. They are typically relatively satisfied with it, as well as averse to losing any component part of their present position. Loss aversion is exemplified by the endowment effect, whereby people value what they possess to a greater degree than they value an equally attractive alternative. This endowment bias makes equal trade unattractive. It also presents a bias toward the status quo in almost any negotiating context. This phenomenon holds interesting implications for political battles that involve such things as negotiations over territorial possession rights or weapons in arms control talks.[34]

Weighting Function

The second component of the evaluation phase of prospect theory is the weighting function. It is graphically represented in figure 2. In this second part of the evaluation phase of prospect theory, each outcome is given a decision weight. This weight does not correspond directly to traditional notions of probability.

In making a decision, a decision maker multiplies the value of each outcome by its decision weight, just as expected utility maximizers multiply utility by subjective probability. However, decision weights in prospect theory differ from those in subjective expected utility theory because decision weights do not obey any of the rational choice probability maxims. Decision weights do not serve solely as measures of the perceived likelihood of an outcome, as probability does in subjective expected utility theory. Rather, decision weights represent an empirically derived assessment of how people actually arrive at their sense of likelihood, rather than a normative standard about how they should derive probability, as subjective expected utility theories advocate. However, decision weights can be

affected by factors, such as ambiguity, that impact probability assessments in rational choice theories as well.[35]

The weighting function in prospect theory has several important features. First, the function does not operate consistently near the endpoints, which can be thought of as absolute certainty on the one end and absolute impossibility on the other. Thus, the function is defined as (1) = 1 and (0) = 0. In other words, people have difficulty with probability at extreme ranges: sometimes people may treat highly likely but uncertain events as certain; on other occasions, people may treat highly unlikely events as impossible.

More specifically, events that are judged to be either certain or impossible receive much heavier *psychological* weights than other events. The most dramatic illustration of this is provided by a study that showed that individuals would pay a great deal more money to remove the last bullet from a gun in a game of Russian roulette than to remove the fourth bullet, even though each removal reduced the risk by the same percentage, one-sixth. Regardless, eliminating the risk to 0 percent *feels* more important than merely diminishing it to 50 percent, even if the percentage of reduction is the same in both cases; indeed, this response is not wrong from an emotional perspective, only from a rational one.[36] This example illustrates that people have a hard time comprehending and evaluating the meaning of probability with extremely improbable or almost certain events; in effect, there is a limit to the decision weight that people can effectively

attach to either the most or the least likely events. The result is that the evaluation of the likelihood of these extreme events becomes more biased than that of events that are only somewhat likely. Both the surgery and flu experiments illustrate this argument nicely as well.

This is where editing can come into play, as highly unlikely events are simply treated as though they were impossible and are thus ignored, and highly likely events are treated as if they offered certain outcomes.[37] The problem with this strategy lies in both directions; very unlikely events do occur occasionally, and very likely events do not happen every so often. An example of an extremely unlikely event that actually did happen can be seen in the tragic explosion of the space shuttle Challenger, where the combination of many highly effective systems created a situation where failure was more likely than it appeared; a hundred systems with a one in a hundred chance of failure results in almost certain disaster of the system over time.[38]

The flip side of this problem occurs when almost certain events sometimes do not actually take place. This occurrence was artfully captured in the famous photograph of Truman holding the newspaper that read, "Dewey beats Truman." Anyone who has bought or sold a house knows that even when everything appears to be progressing as planned, and all the agents consider the sale to be a "done deal," something can happen with the financing and the whole agreement can evaporate in the final stages.

The second important aspect of the weighting function is that low probabilities are overweighted while high and medium probabilities are subjectively underweighted. In other words, events that are not judged to be very likely are given more importance than they deserve. This happens, for example, when people place high risk assessments on an environmental toxin that has a very low probability of causing harm to any given individual. Similarly, occurrences that are estimated to be "somewhat likely" to "almost certain" are treated with less importance than they merit in the decision-making process. An example of this is seen when people were asked whether there are more homicides than suicides in the country every year: most people will say that homicides kill more people than suicides when in fact the opposite is true. Or they may claim that airplanes kill more people than what is actually true.[39] This is because low probability events, especially when they provide vivid and salient representations (airplanes, homicides), are overweighted, and high probability events (suicide, car accidents) are relatively underweighted.

This means that something that is perceived to be unlikely has more impact on decision making than it normatively should. The classic examples of this are lotteries and insurance. In lotteries, people are willing to

take a sure loss, however small, for the essentially nonexistent chance of a huge gain. In this way, people can be risk seeking in gains when the probability of gain is low. In insurance, people are willing to take a sure loss in the present to prevent the small likelihood of a larger loss in the future. In this situation, people can be risk averse in losses when the probability of loss is small. In both these situations, expected utility models might not consider such behavior to be normative. However, prospect theory accounts for these discrepancies by noting the extreme (over)weight and attention that individuals give to small probabilities that potentially involve either huge gains (winning the lottery) or huge losses (losing your house in a fire). This phenomenon helps account for worst-case scenario planning.

Simultaneously, events that are, in actuality, quite likely have less influence on decision making than they normatively ought. This helps explain why many policies, such as gun control, are not pursued until after a salient example of its failure is made public. For example, it was not until James Brady, President Reagan's Press Secretary, was shot in 1981, thus becoming the active conservative poster image for the gun control lobby, that the issue started to be taken seriously in Congress. Although Brady's injury did not increase the overall risk of handguns in society, the salience of the issue was increased because of Brady's position and visibility.

In most cases, the weighting function contributes greatly to the risk propensity dictated by the S-shaped value function. As Kahneman and Tversky write:

> Underweighting of moderate and high probabilities relative to sure things contributes to risk aversion in gains by reducing the attractiveness of positive gambles. The same effect also contributes to risk seeking in losses by attenuating the aversiveness of negative gambles. Low probabilities, however, are overweighted, and very low probabilities are either overweighted quite grossly or neglected altogether . . . The overweighting of low probabilities reverses the pattern described above: It enhances the value of long shots and amplifies the aversiveness of a small chance of a severe loss. Consequently, people are often risk seeking in dealing with improbable gains and risk averse in dealing with unlikely losses. Thus, the characteristics of decision weights contribute to the attractiveness of both lottery tickets and insurance policies.[40]

One of the consequences of the weighting function is that probabilistic changes in the midranges are undervalued relative to equal changes that manage to transform an event from merely probable into one that is either

certain or impossible. This has been called the certainty effect. In other words, reducing a 50 percent risk in half does not have the same impact as eliminating a 25 percent risk, as demonstrated by the example of removing bullets in a game of Russian roulette. Obviously, in policy-making decisions, any change in likelihood that makes an outcome either impossible or certain promises to have the greatest impact.

The pseudocertainty effect is another important aspect of prospect theory, whereby "an event that is actually uncertain is weighted as if it were certain."[41] Again, this phenomenon contributes to the predilection many decision makers have for worst-case-scenario planning. This tendency can be particularly problematic in political situations where weighting effects are exacerbated by the use of representative analogies. If a leader believes that another is *certainly* like, say, Hitler, then many subsequent assessments and decisions will be based on assumptions flowing from such a characterization, which may not, in fact, prove accurate. This was the case, for example, with the European leaders who believed that Nasser was a latter-day Hitler during the Suez crisis, and yet this prophecy was not borne out by subsequent history. Note that this bias can serve to make someone appear to be *either* more or less malicious than he may be in reality.

Application to International Politics

One of the central benefits of invoking psychological theories for understanding political events is the superior descriptive power that psychological theories offer. Psychological models do not require an analyst to pretend that people will, or should, act in a certain way that is counterintuitive. Rather, psychological models rest on empirical testing of how people actually make the decisions and choices they do in all kinds of situations. The value of theory developed on such empirical testing lies in its validity, accuracy, and authenticity.

Now that the substance of prospect theory has been discussed, it is appropriate to turn to the question of its applicability to political issues in the international arena. As noted in the introduction, this study sets out to conduct a parallel demonstration of theory, to illustrate that prospect theory can order evidence in a compelling way across cases and over time. This method is more appropriate to this study than in-depth case study methodology because establishing patterns across cases is more convincing and persuasive in demonstrating the fruitfulness of applying prospect theory to international relations. In addition, this study also seeks to test the external validity of prospect theory to the real world. In this way, the goal of this work is to determine whether or not prospect theory presents

the accurate and powerful predictive and explanatory tool for understanding decision making under conditions of risk in international contexts that it does in a psychological laboratory.

Needless to say, there are several limitations to utilizing a psychological theory to illuminate political decision making. Not the least of these considerations is the extent to which political demands can compound psychological biases. Prospect theory is relatively new; although it has been applied extensively in economic models, it has not really been well tested in explicitly political arenas. Indeed, one of the challenges of this work is to demonstrate the applicability of prospect theory outside experimental conditions.

There is no technical or theoretical reason why the theory can not be applied well beyond the monetary gambles that defined its characteristics. The theory can be applied to decisions where the probabilities are not known, unlike monetary gambles where probabilities are determined in advance of play. Analysts must remember, however, that decision weights, although tied to subjective probabilities, are not technically the same as such probability estimates, and they fall prey to many biases that do not enter into consideration when all the probabilities are known in advance.[42] In applying prospect theory beyond the realm of monetary gambles, the goal is to show that the expectations remain the same: outcomes are evaluated in terms of gains or losses relative to the status quo reference point; and this domain, in turn, affects risk propensity in systematic and predictable ways.

There is clear empirical support for prospect theory at an individual level in the laboratory. Although many people are intrinsically suspicious of classroom findings, the mirror of introspection seems to support intuitively the validity of the experimental findings in this particular case. Decision makers are *not* immune to the effects of psychological tendencies merely by virtue of their roles. Indeed, there is an extensive literature investigating the impact of expertise on the ability to overcome some of the biases under discussion. While greater exposure to certain information can occasionally help an expert to greater accuracy than a novice in judgments of frequency,[43] other findings show no difference in the way that experts and novices are affected by framing or in how they respond to incomplete information.[44] In most cases, experts are found to display essentially the same biases in judgment and decision making as college students.[45] Susan Fiske and her colleagues have argued that experts have better organized knowledge and thus may have more space in memory for inconsistent information.[46] However, there is empirical evidence that elite beliefs are remarkably resistant to change, even in the face of dramatic changes in the

international environment.[47] While there may be some difference between expert and novice inferential strategies, they are not significant enough to warrant excluding experts from the biases under discussion in this study by virtue of their position. In fact, experts are more similar to than different from novices in the way in which cognitive biases affect their judgment and decision-making abilities.

Prospect theory does not require that individual differences have *no* impact or importance. Rather, prospect theory reintroduces the importance of the situation into the analysis of decision making. Prospect theory relies on experimental evidence of mean differences between groups with regard to the impact of domain on risk propensity to point to significant preferences in choice above and beyond that which might be accounted for by individual differences.[48]

If the relative riskiness of response in international relations is affected by the perceived domain of action (gains or losses), this finding has important implications for the way in which political questions should be framed and presented to decision makers; this is particularly crucial if normatively unacceptable biases need to be minimized in order to avoid suboptimal decisions, and thus potentially hazardous outcomes. This is certainly the case if a simple linguistic manipulation of the available options early on might prevent a counternormative choice later. For this reason, it is worthwhile to investigate the extent to which a decision maker's cognitive biases might affect his choices, and subsequently even his state's behavior, in systematic and predictable ways.

Applying prospect theory to the international environment is an attempt to conceptualize the nature of risk in a more productive manner. If the predictions of prospect theory hold true in international settings, it might then be possible to introduce procedural or institutional mechanisms designed to compensate partially for such counternormative tendencies as framing effects. These kinds of changes could have a very positive influence on the decision-making process. For example, as discussed previously, it may be useful to present a decision maker with the same options framed in several different ways simultaneously, so as to make framing effects more transparent and thus less unconsciously influential on the substance of decision making.

Operationalization

In seeking to apply prospect theory to international relations, this study concentrates on the security arena, where decision making often takes place under conditions of greatest risk. The goal is to see whether decision

makers manifest systematic differences in risk propensity as a result of differences in the perceived domain of action. This study will look at the president's risk-taking in the domain of gains and in the domain of losses.

This work focuses on postwar American foreign policy behavior. For purposes of this study, domain, coded as gains or losses relative to a reference point, is the "independent variable." Risk propensity, categorized as being either risk seeking or risk averse, is the "dependent variable." Domain causes risk propensity. If the theory holds, actors will be risk averse if facing potential gains, and risk seeking when confronted with potential losses.

Needless to say, it is challenging to determine domain and risk in ways that are not only independent of one another, but not tautological either. In most cases, a decision maker's behavior (words) offers the best evidence for perceived domain; however, an actor's assessment of domain is often subjective, or suppressed for political reasons, and this constraint must simply be admitted. However, when a public consensus concerning domain is present, it increases the likelihood that such a consensus is shared by the central decision maker, especially if he is sensitive to polls; such consensus enhances confidence in the accurate characterization of a given domain.

In some sense, the problems faced by prospect theory in this matter are no greater than those faced by scholars who prefer rational choice modeling, which starts from a position of "revealed preferences." Prospect theory may appear to be less precise than rational choice theories claim to be, but, in reality, prospect theory proves to be more analytically malleable. This is because, with rational choice theories, utilities are notoriously difficult to assess, and basic supporting axioms are frequently violated in individual behavior. Assessments of information are often subjective and open to debate; merely applying mathematical formulas, letters, and numbers to certain variables does not render those variables, or their outcomes, any more "objective." Most importantly, rational choice models require an unwieldy amount of information, detail, and precision and may not be useful for this reason. Prospect theory requires only knowledge of domain in order to predict risk propensity. Moreover, rational choice models are vulnerable to different analysts structuring the same problem in contradictory ways. In contrast, prospect theory builds on experimental findings concerning human judgment and decision-making behavior. In fact, it is worth remembering that *experimental* findings are one of the few ways to definitely establish *causal* links.[49] Psychological accuracy makes prospect theory a more realistic and manageable model. Rational actor models, after all, invoke rationality assumptions that are without question empirically invalid; prospect theory is not nearly so wanton in its starting assumptions. As a result, prospect theory is sufficiently

rigorous to test in the international environment, and it is not as intractable in assessing utility as are many rational choice models.

Domain

Domain refers to whether an action takes place in the perceived realm of gains or of losses. Domain can be relatively objective or subjective. For purposes of prospect theory, framing in domain is restricted to a sense of whether the actor perceives himself to be acting from a position of gains or losses. Gains or losses can be defined by objective criteria, such as public opinion polls. Domain can also be ascertained by subjective assessments derived from memoirs, interviews, and archival materials. The problem in international relations is that it is often impossible to tell the difference between the objective and the subjective framing of domain. Polls are examples of data that are often difficult to characterize; results may be considered "objective," but how they are interpreted must clearly be regarded as "subjective." As a result, there can be confusion as to the appropriate domain of action. This is especially important when the objective and subjective domains do not match. When this occurs, both types will be noted, and differences in assessment will be highlighted.

An additional complication in determining domain derives from the fact that different people may use different criteria in order to define their domain of action. For example, some presidents may consider their domestic political support to be the crucial variable; international public opinion may be irrelevant as long as the politician is certain that he can win reelection at home. Positive international public opinion may be irrelevant to a president who has lost his domestic support; Richard Nixon may have been held in high esteem by the leadership of the Soviet Union and China in 1974, but this did not prevent him from being forced to resign in the wake of the Watergate debacle. Different actors may look to different appraisals in order to determine whether or not they are acting in a realm of gains or losses. Obviously, this assessment can change over time, as the situation changes, as decision makers use different measures of success in different issue areas, or as leaders come to rely on certain indicators as being more valid in certain situations or at different times than others. In some cases, the judgment may be overwhelming, as when all indicators show the person to be in deep trouble, as Johnson was during Vietnam, or Nixon was during Watergate. However, in many other situations, the judgment is less clear and will depend on the best guess concerning the criterion of most value to the actor. As always, the central concern must focus on whether the decision maker is operating in a relative state of gains or losses.

As a result of the inherently subjective nature of perception, domain,

like risk propensity and reference point, must be defined case-by-case and actor-by-actor. To assess a decision maker's domain accurately, an analyst needs to distinguish among the various criteria that different actors may use to determine perceived domains of action. In many cases, the analyst may be aided in this task by information about the relevant historical analogy that the decision maker is invoking in responding to the current situation. The perception that counts in this regard is that of the particular decision maker under investigation. In most cases in the postwar security arena, this individual will be the president. More specifically, the relevant objective sources may include: the content of speeches; archival material; public opinion polls; congressional indicators, such as the number of overrides on vetoes; economic indicators, such as the stock market index and inflation or unemployment rates; newspaper editorials; and world public opinion as manifested through diplomatic channels. Sources of subjective assessments of domain might come from interviews, private memoirs, archival letters, diaries, transcripts, and foreign relations documents. The danger in using these personal, historical sources is that they run the risk of being informed by retrospective bias, whereby leaders may selectively remember factors that show them off in the best light. From this perspective, it is easiest and best to trust information from a memoir that makes a leader look bad; he is very unlikely to have a good reason for portraying himself in a negative light unless it is the truth. The most relevant or informative of these indicators can be used to assess how the decision maker felt about the environment he faced and whether or not his assessment matched the objective criteria. In this way, different evidence will be used for different cases.

Clearly, there may be some technical problems with this approach. However, real-life decision making rarely mimics the precision of an experimental laboratory, where all variables can be controlled. Rather, it is only possible to work with the information that is available and make the best judgments possible. Prospect theory's value lies in the variables that the theory points to as significant for analysis and discussion. To the extent that these variables differ from those investigated under more traditional paradigms, it offers the possibility of shedding light on previously ignored, but potentially important, factors in decision making, such as domain.

Risk

Risk is an even more difficult variable to operationalize than domain. The central concern is fear of tautological definition; risk cannot be determined by domain, on the one hand, or by outcome, on the other. In operational-

izing risk in an independent fashion, an economic definition of risk will be invoked; risk will be analyzed in terms of relative variance in outcome. A choice is relatively risk seeking if it has greater outcome variance in promoted values than alternative options. For example, if one option presents a 50 percent chance of winning $5 and a 50 percent chance of losing $10, it is less risky than a gamble which offers a 50 percent prospect of winning $50 and a 50 percent chance of losing $100. In this case, neither the positive nor the negative outcome of the first gamble is as extreme as that offered by the second; it is thus a riskier choice to play the second bet, regardless of outcome and independent of domain.

The difficulty is that choices vary in both probability and desirability. Another problem is that political decision makers *never* present their options in cardinal form, with concrete subjective probability assessments attached to each choice as decision analysts would prefer.

Most of the time, all that political decision makers offer is the fact that one policy option is preferable to another in a particular issue area. Yet military risks can conflict with political ones and so on. It can be difficult to separate out these factors, but one way to compare across policies that offer different "expected" values across issue areas is through the use of ordinal comparisons. For example, let's say a policymaker is trying to decide between policies A and B. Policy A generates the best outcome if it works, and the worst outcome if it doesn't. Policy B, on the other hand, does not offer as good an outcome as A if it works, but the outcome of B is not as bad as the outcome in A if B fails. So, an analysis of these options might proceed as follows. First of all, B is a less risky choice than A because there is less variance in the outcome: the best of B is not as good as the best of A, but the worst of B is not as bad as the worst of A. A graphic hierarchy of these options might appear as illustrated below:

Best-A
Best-B
Worst-B
Worst-A

Second, using this method of analysis, it becomes possible to compare across policies that offer different expected values by comparing the ordinal ranking on the issue area of major concern. For example, if policies B and W are compared, and all possible outcomes for B are superior to all possible outcomes for W, then B is clearly the risk-averse and obviously better, more "rational" choice. A graphic depiction of the hierarchy of such an option set might look similar to the one presented below:

Best-B
Worst-B
Best-W
Worst-W

Clearly, B is the superior choice in rational terms. This is because B maximizes all outcomes in a way W is not able to accomplish. The worst outcome from B will always prove superior to the best outcome from W. Using this strategy, it becomes possible to compare policies in terms of variance in outcome values without having to precisely determine a decision maker's subjective probabilities, and without having to risk tautology in the definition of risk.[50] This perspective also acknowledges that different policies possess different "expected values" in their outcomes. In many circumstances, choices are made precisely because they promote the greatest expected value, and not for any other reason. In these instances, prospect theory may provide no additional insight over standard political analysis, as when a decision maker picks an option with the greatest expected value while acting cautiously in a domain of gains.

Given this method of determining risky choice, relative risk propensity in this study will be categorized in terms of risk-seeking and risk-averse behavior. The riskiness of the option chosen will be assessed relative to that of the other options perceived to be available at the time in terms of the variance in outcome just described.

The second benefit of this definition is that it takes into account the other options that are considered. This is important in order to see if the framing of options appears to have an effect on the substance of the decisions that are made. In this way, it may be possible to demonstrate that risk assessment changes as the frame changes. By looking at risk propensity in terms of the other options that are considered at the time, framing effects may be thrown into illuminating relief.

Reference Point

The reference point is a critical concept in assessing gains and losses; thus, it is central to the notions of domain and risk. The reference point is usually the current steady state, or status quo, to which a person has become accustomed. This status quo point can be influenced by a number of different factors, including cultural norms and expectations. Moreover, it might be affected by such variables as personal levels of aspiration. These considerations may or may not be realistic in nature.[51] Some expectations, though unrealistic, may still have an impact on the choices an individual makes. For example, however unrealistic it may be to expect to obtain an

academic job in a bad market, many individuals still pursue graduate degrees. In this case, it is up to the analyst to sort out whether the student is irrational, grandiose, or merely risk seeking in a domain of losses, as prospect theory would predict.

The definition of the reference point is crucial to the determination of domain. Most importantly, shifts in reference point can affect definitions of domain. As Kahneman and Tversky write:

> There are situations in which gains and losses are coded relative to an expectation or aspiration level that differs from the status quo . . . A change of reference point alters the preference order for prospects. In particular, the present theory implies that a negative translation of a choice problem, such as arises from incomplete adaptation to recent losses, increases risk seeking in some situations . . . This analysis suggests that a person who has not made peace with his losses is likely to accept gambles that would be unacceptable to him otherwise . . . a failure to adapt to losses or to attain an expected gain induces risk seeking.[52]

At this point, an example may be helpful to illustrate the impact of expectation or aspiration on the assessment of reference point. A junior faculty member can survive on "promise" for a few years after being hired. During this time, the young professor need not have a long publication list in order to be in a domain of gains. However, by the time the tenure clock ticks away, promise is no longer an adequate measure of success. While the objective reality of the publications record may not have changed at all (indeed, that is the cause of concern for the tenure committee), the reference point has shifted. Time slowly but surely affects the way "promise" translates into "disappointment" by continually shifting the reference point from the realm of reality into that of aspiration.

In this way, level of aspiration can affect the assessment of reference point, just as social norms and cultural values might as well. Nonetheless, in most circumstances, the default reference point is typically the current status quo.

However, prospect theory itself is theoretically silent about the issue of temporal change. Gains and losses are always evaluated relative to the reference point. That is, the theory makes no comment on how the direction of change in the status quo affects the assessment of the reference point. However, normal psychological theory would predict that the reference point would tend to gravitate, with time, to an adaptation point, which would correspond to the new status quo. The issue then becomes the period of lag time. During that time, things are still evaluated relative to

the old status quo. This old status quo remains the reference point until adaptation takes place. Moreover, loss aversion suggests that the lag will last longer in adjusting to losses than to gains.[53]

As with domain, the relevant reference point will have to be determined on a case-by-case basis; the reference point will have to be defined independently for each actor at each decision point, since each person may have a different idea of the relevant status quo, even in the same objective situation for reasons of expectation, as discussed previously. For example, Eisenhower held a very different notion of the status quo during the Suez crisis than did British and French leaders. By and large, however, the reference point will be defined in relation to the central decision maker, which in these cases is the president.

Loss Aversion

Because losses loom larger than gains in prospect theory, it is expected that there will be greater focus and attention on real or feared losses than on prospective or forgone gains. This phenomenon is predicted by the steep convex shape of the value curve in the domain of losses. The impact of such loss aversion is heightened by the fact that political punishment for losses is generally greater than for failure to make gains.

Loss aversion also suggests that it is much more difficult for people to adjust to losses than to gains.[54] As a result, more energy will be spent trying to avoid or recoup losses than will be devoted to consolidating, or obtaining, new gains.

Loss aversion induces a preference for the status quo in most situations. This property is particularly noticeable in negotiating and bargaining contexts, such as arms control, but is certainly not limited in its effect to those issue areas. The phenomenon of loss aversion is exacerbated by other psychological tendencies as well. First, the differences between options will seem more important if they are *framed* in terms of losses or negative aspects rather than if they are *framed* in terms of positive aspects or gains. Second, adding a loss to a particular choice will hurt it more than adding an advantage will help it. In this way, it can be shown that sabotaging an undesired alternative becomes a much easier maneuver than enhancing a favorable one. Lastly, a beneficial policy that is hindered by even one small disadvantage may appear less attractive than another policy that boasts two much smaller positive qualities, but carries no possibility of a negative outcome.[55]

Loss aversion raises an additional important point concerning frame change and ambiguity effects. In many situations the status quo is unclear, and in addition it may incorporate other subjective assessments, such as expectations, as previously discussed. The real status quo might be up for

perceptual grabs, just as is the reference point upon which it is based. Relevant definitions of gains, losses, status quo, and reference point are ambiguous and dynamic; they change from actor to actor and situation to situation. The best effort to clarify these conceptions will be made on a case-by-case basis, but all these definitions are affected by framing effects and subjective assessments that are not always clear or available.

Case Outline

The casework that follows constitutes an empirical investigation applying prospect theory to international politics. Four examples are examined in substance in the following chapters: two decisions from the Eisenhower administration and two from the Carter administration. Both presidents led the United States in the nuclear age, so it is possible to control for differences in decision making that might result from the development of such weapons of mass destruction. These presidents also come from different political parties, so the effect of affiliation or, more broadly, ideology on risk propensity can be roughly controlled for in these cases as well.

These cases were chosen to differ along the lines of the independent variable: one case from the domain of losses, and one from the domain of gains, for each president. In the domain of losses, the cases are: Carter's decision to go ahead with the failed rescue mission of the hostages in Iran in April 1980; and Eisenhower's cover-up following the Soviet downing of the U-2 American reconnaissance aircraft in May 1960. In the domain of gains, the cases are: Carter's decision to exclude the Shah of Iran from entry into the country until October 1979; and Eisenhower's decision to resist his French and English allies in their military venture against Egyptian President Nasser in the Suez crisis of 1956.

The goal of this investigation is to analyze these domain-specific cases to determine whether the dependent variable, risk-taking behavior, differs in accordance with the predictions of prospect theory along the independent variable, domain. A graphic display of the central hypotheses might appear as follows:

	Risk Seeking	Risk Averse
Gains		PT predicts
Losses	PT predicts	

As delineated, prospect theory expects risk seeking in the domain of losses and risk aversion in the domain of gains.[56] The cases were of interest initially because the president's behavior appeared to be anomalous and not easily explicable from within the context of alternative analytic paradigms.

The application of prospect theory to each case that follows proceeds in four parts. First, each chapter begins with an examination of the relevant domain of action, either gains or losses. Next, each chapter looks at the options that were considered at the time. In this part, the particular framing of the relevant issues and questions to the president by his principal advisors will be investigated at a substantive level. In this way, it is possible to examine differences in the political emphases and goals of various players. The third step consists of the evaluation of the specific risk propensity of the action taken, risk seeking or risk averse. The actual decision is then examined and a comparison is made between the predictions of the theory and the actual decisions reached. The last part briefly describes the outcome of each particular event. The crucial aspect of these analyses lies in the relationship between domain and risk, and not in the success or failure of the actual decision or policy. Thus, the decision-making process is not judged by the success or failure of the outcome.

The claim is not that prospect theory explains everything. Rather, the purpose of the case studies is to document that domain and framing can have a profound and predictable, though often subtle, effect on the substance and content of decision making under conditions of risk. Through a parallel demonstration of theory, it is possible to show that prospect theory can illuminate a variety of important cases in postwar American foreign policy and thus offers useful insight into risk propensity in international politics.

Prospect theory can help explain the choice of an option that does not in fact promote the greatest expected value. Prospect theory helps explain how choice decisions are evaluated when the options available do not differ significantly in their expected value or where optimal choice is not evident. Prospect theory helps explain why nonoptimal choices are often made, especially in the case of loss aversion. Finally, prospect theory addresses those cases where decisions require choices among options that promote conflicting values. By examining how these options are compared and evaluated in terms of gains and losses in each issue area and not only in terms of absolute outcome, it becomes possible to shed new light on critical but previously unrecognized aspects of important decisions.

Prospect theory offers a wealth of knowledge that can be fruitfully applied to problems in the international environment. The following chapters will apply prospect theory to events in the international arena that explicitly involve judgment under uncertainty and decision making under risk. In this way, it is hoped that prospect theory will provide a more theoretically sophisticated understanding of the nature of risk propensity.