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Behavioral Economics and Risk Taking

ECO 304K: Introduction to Microeconomics

In this textbook, we have proceeded as if every person were ***Homo economicus***, a rationally self-interested decision-maker. This idealized individual is acutely aware of opportunities in the environment and strives to maximize the benefits received from each course of action while minimizing the costs.

Sometimes our instincts do steer us in the right direction; more commonly, however, they lead us astray in various subtle ways. In this chapter, we'll see how that happens; to fold the broadest possible set of human behavior into economic analysis, we must turn to the field of ***behavioral economics***. Which enables us to capture a wider range of human motivations than the rational-agent model alone affords.

Big Questions

- How do economists explain irrational behavior?
 - Economists use a number of concepts from behavioral economics to explain how people make choices that display irrational behavior. These concepts include bounded rationality, misperception of probabilities, framing effects and priming effects, the status quo bias, intertemporal decision-making, the endowment effect, judgement about fairness, preference reversals, and prospect theory.
 - Folding the behavioral approach into the standard model makes economists' predictions about human behavior much more robust.
- What is the role of risk in decision-making?
 - Risk influences decision-making because people can be risk-averse, risk-neutral, or risk-takers.
 - In the traditional economic model, risk tolerances are assumed to be constant; if an individual is a risk-taker by nature, he or she will take risks in any circumstances. Likewise, if an individual does not like to take chances, he or she will avoid risk.
 - Maurice Allais proved that many people have inconsistent risk preferences, or what are known as preference reversals. Moreover, he showed that simply

because some people's preferences are not constant does not necessarily mean that their decisions are irrational.

- Prospect theory suggests that individuals weigh the utilities and risks of gains and losses differently and are therefore willing to take on additional risk to try recover losses caused by negative shocks.

How do economists explain irrational behavior?

Like economics, psychology endeavors to understand the choices people make; one key difference is that psychologists do not assume that people always behave in a fully rational way. As a result, psychologists have a much broader toolbox at their disposal to describe human behavior; **behavioral economics** is the field of economics that draws on insights from experimental psychology to explore how people make economic decisions.

Until relatively recently, economists have ignored many human behaviors that do not fit their models. For example, because traditional economic theory assumed that people make optimal decisions, economic theorists did not try to explain why people might make an impulse purchase. Behavioral economists, however, understand that many behaviors contradict standard assumptions about rationality; they employ the idea of **bounded rationality**, which proposes that although decision-makers want a good outcome, either they are not capable of performing the problem-solving that traditional economic theory assumes or they are not inclined to do so.

Bounded rationality, or limited reasoning, can be explained in three ways: **first**, the information the individual uses to make the decision may be limited or incomplete; **second**, the human brain has a limited capacity to process information; **third**, there is often a limited amount of time in which to make a decision. These limitations prevent the decision-maker from reaching the results predicted under perfect rationality.

We will continue our discussion of behavioral economics by examining various behaviors that do not fit assumptions about fully rational behavior. These include misperceptions of probabilities, inconsistencies in decision-making, and judgements about fairness when making decisions. The goal in this section is to help you recognize and understand many of the behaviors that lead to contradictions between what economic models to predict and what people actually do.

Misperceptions of Probabilities

Economic models that assume rationality in decision-making do not account for the way people perceive the probability of events. Low-probability events are

often overanticipated, and high-probability events are often underanticipated; to understand why, we consider several familiar examples, including games of chance, difficulties in assessing probabilities, and seeing patterns where none exist.

Games of chance

Playing games of chance is generally a losing proposition, yet even with great odds against winning, millions of people spend money to play games of chance. How can we explain this behavior?

For some people, the remote chance of winning a lottery offers hope that they will be able to purchase something they need but cannot afford or even to escape from poverty. In many cases, people have incomplete information about the probabilities and price structures; most lottery players do not calculate the exact odds of winning. Lottery agencies typically highlight winners, as if the games has a positive expected value, which gets people excited about playing. Imagine how sobering it would be if every headline trumpeting the newest lottery millionaire was followed by all the names of people who lost. In fact, almost all games of chance have **negative expected values** for the participants, meaning that players are not likely to succeed at the game.

Players often operate under the irrational belief that they have control over the outcome; they're sure that playing certain numbers or patterns will bring success. Many players also feel they must stick with their favorite numbers to avoid regret; everyone has heard stories about players who changed from their lucky pattern only to watch it win.

In contrast, some gaming behaviors are rational; when the expected value of a gamble is positive, we actually expect that the more you play, the more likely it is that your earnings will be higher than your losses.

Gambles can also make sense when you have very little to lose or no other options; and some people find the thrill of gambling enjoyable as entertainment, whether they win or lose. However, most gambling behaviors do not have rational motivations; gambling often creates addictions that lead players to make poor financial decisions.

The difficulties in assessing probabilities

In our discussion of games of chance, we saw that people who gamble do not usually evaluate probabilities in a rational way; but this irrational

decision-making also happens with many other behaviors besides gambling.

The difficulty in recognizing the true underlying probabilities, combined with an irrational fear of regret, leads to many poor decisions.

Understanding these tendencies help economists to evaluate why some decisions are difficult to get right.

Seeing patterns where none exist

Two fallacies, or false ways of thinking, help explain how some people make decisions: **the gambler's fallacy** and **the hot hand fallacy**.

The gambler's fallacy is the belief that recent outcomes are unlikely to be repeated and that outcomes that have not occurred recently are due to happen soon. In other words, someone who uses the gambler's fallacy believes that if many "heads" have occurred in a row, then "tails" is more likely to occur next.

The **hot hand fallacy** is the belief that random sequences exhibit a positive correlation (relationship).

Inconsistencies in decision-making

If people were entirely rational, they would always be consistent; so the way a question is asked should not alter our responses, but research has shown that it does. Likewise, rational decision-making requires the ability to take the long-run trade-offs into account: if the returns are large enough, people should be willing to sacrifice current employment for future benefits. Yet many of us make shortsighted decisions; in this section, we examine a variety of decision-making mistakes, including framing effects, priming effects, status quo bias, intertemporal decision-making, and the endowment effect.

Framing Effects and Priming Effects

We have seen a number of ways in which economic models do not entirely account for the behavior of real people; one common mistake that people make involves the **framing effect**, which occurs when an answer is influenced by the way a question is asked or a decision is influenced by the way alternatives are presented.

Another decision-making pitfall, known as the **priming effect**, occurs when the order of the questions influences the answers,

Status Quo Bias

When people want to keep things the way they are, they may exhibit what is known as the **status quo bias**; this bias leads decision-makers to try to protect what they have, even when an objective evaluation of their circumstances suggests that a change would be beneficial.

The status quo bias causes people to behave conservatively; the cost of this behavior is missed opportunities that could potentially enhance welfare.

Status quo bias also explains why new products and ideas have trouble gaining traction: many potential customers prefer to leave things the way they are, even if something new might make more sense.

Intertemporal Decision-making

Intertemporal decisions occur across time; **intertemporal decision-making**—that is, planning to do something over a period of time—requires the ability to value the present and the future consistently. The ability to resist temptation is illustrated by a classic research experiment conducted at a preschool at Stanford University in 1972.

The Endowment Effect

What belongs to us, and what we give away, always seems very precious, because once we own something, we value it more. That's the **endowment effect**, and it explains why the loss of value associated with selling an item, or giving it up, is typically greater than the financial or emotional gain associated with obtaining the item in the first place. The endowment effect lies outside traditional economic theory, which assumes that humans consistently make rational decisions.

There's extensive evidence that physically handling an object can increase our perceived ownership of it.

Judgement about fairness

The pursuit of fairness is another common behavior that is important in economic decisions but that standard economic theory cannot explain.

While fairness is not normally modeled in economics, behavioral economists have developed experiments to determine the role of fairness in personal decisions. The **ultimatum game** is an economic experiment in which two

players decide how to divide a sum of money; the game shows how fairness enters into the rational decision-making process. In the game, player 1 is given a sum of money and is asked to propose a way of splitting it with player 2; Player 2 can either accept or reject the proposal, if player 2 accept, the sum is split according to the proposal. However, if player 2 rejects the proposal, neither player gets anything; the game is played only once, so the 1st player does not have to worry about reciprocity.

Each of the ideas that we have presented in this section, including misperceptions of probability, inconsistency in decision-making, and judgements about fairness, represent a departure from the traditional economic model of rational maximization. In the next section, we focus on risk-taking; as you will soon learn, not everyone evaluates risk in the same way...this fact has led economists to reconsider their models of human behavior.

What is the role of risk in decision-making?

In this section, we examine the role that risk plays in decision-making; the standard economic model of consumer choice assumes that people are consistent in their risk-taking preference. However, people's risk tolerances actually vary widely and are subject to change; thus, risk-taking behavior is not nearly as simple or predictable as economists once believed. We begin with a phenomenon known as **preference reversal**; we then consider how negative surprises can cause people to take more risk, which is explained by **prospect theory**.

Preference Reversals

As you know, trying to predict human behavior is not easy; Maurice Allais, the recipient of the 1988 Nobel Prize in Economics, noticed that people's tolerance for risk appeared to change in different situations. This observation did not agree with the standard economic model, which assumes that an individual's risk tolerance is constant and places the individual into one of the three distinct groups: **risk-averse people**, who prefer a sure thing over a gamble with a higher expected value; **risk-neutral people**, who choose the highest expected value regardless of the risk; and **risk-takers**, who prefer gambles with lower expected values, and potentially higher winnings, over a sure thing.

Allais developed a means of assessing risk behavior by presenting the set of choices (known as the Allais paradox) depicted in Table 17.1. Individuals were asked to choose their preferred options between gambles A and B and then again between gambles C and D.

TABLE 17.1	
The Allais Paradox	
Choose gamble A or B	
Gamble A	Gamble B
No gamble—receive \$1 million in cash 100% of the time	A lottery ticket that pays \$5 million 10% of the time, \$1 million 89% of the time, and nothing 1% of the time
Choose gamble C or D	
Gamble C	Gamble D
A lottery ticket that pays \$5 million 10% of the time and nothing 90% of the time	A lottery ticket that pays \$1 million 11% of the time and nothing 89% of the time

Economic science predicts that people will choose constantly according to their risk preference. As a result, economists understood that risk-averse individuals would choose the pair A and D; likewise, the pair B and C makes sense if the participants are risk-neutral and wish to maximize the expected value of the gambles.

A **preference reversal** occurs when risk tolerance is not consistent; Allais argued that a person's risk tolerance depends on his or her financial circumstances.

It turns out that preference reversal are more common than economists once believed; for example, almost 80% of all income tax filers expect to get a refund because they overpaid in the previous year. This behavior is odd, since there is an opportunity cost of waiting to get money back from the government when it didn't need to be paid in the first place. Employees could have asked their employers to withhold less and enjoyed their money sooner; individuals who choose to wait to receive their money later are said to have a difference that is weakly positive. In most circumstances, people have strongly positive time preferences: they prefer to have what they want sooner rather than later; so what do these taxpayers do when they learn the amount of their refund? In many cases, they pay their tax preparers an additional fee to have their refunds sent to their bank accounts electronically so they can receive the money sooner! Traditional economic analysis is unable to explain behavior; but armed with Allais' insights, we now see this behavior as a preference reversal.

Prospect Theory

Prospect theory, developed by Daniel Kahneman and Amos Tversky, suggests that people weigh decisions according to subjective utilities of gains and losses. The theory implies that people evaluate the risks that lead to gains separately from the risks that lead to losses; this concept is useful because it explains why some investors try to make up for losses by taking more chances rather than by maximizing the utility they receive from money under a rigid calculation of expected value.

Conclusion

Behavioral economics challenges the traditional economic model and invites a deeper understanding of human behavior. Armed with the insights from behavioral economics, we can answer questions that span a wider range of behaviors; we have seen behavioral economics at work in the examples in this chapter, which include the “opt-in” or “opt-out” debate, the economies of risk-taking, the effects of question design, the status quo bias. These ideas do not fit squarely into traditional economic analysis; you have learned enough at this point to question the assumptions we have made throughout the book. In next chapter, we apply all tools we have acquired to examine one of the most important sectors of the economy—health care and health insurance.