Chapter 17

Behavioral Economics

A. Summary

This is new chapter in the 11th edition surveys recent developments in behavioral economics. In contrast to the neoclassical perspective occupying the rest of the book, behavioral economics studied in this chapter does not take as its point of departure the assumption that economic agents make perfectly rational decisions. Rather, behavioral economics seeks to understand how decisions are made by real-world (and thus possibly imperfect) economic agents. It seeks to understand the extent of possible mistakes, if the mistakes show any predictable patterns, or if what seem like mistakes are perhaps maximization of different social goals than simply selfish payoff maximization. In brief, behavioral economics seeks to integrate psychology and economics.

This is exciting material because it has been an active area of research over the past several decades. Being relatively young, the subject is less developed than neoclassical economics and the ultimate value of the approach is still the subject of considerable debate. There is too much material to offer a comprehensive survey in this chapter, so it only covers a few of the highlights.

The chapter is organized around three broad limits to selfish maximizing behavior studied in three separate sections: limits to cognitive ability, limits to willpower, and limits to self-interest. The section on limits to cognitive ability studies possible mistakes made in complicated environments in which uncertainty, strategy, or overwhelming numbers of choices play a role. The section on limits to willpower presents the widely used model of hyperbolic discounting. According to this model, the marginal rate of substitution between payoffs in two periods is one thing in the planning stage but another when one is actually living in the periods, leading to time inconsistency. The section on limits to self-interest starts with the idea of altruism, which is easy to model in the standard neoclassical framework, but then goes on to more complicated social preferences such as fairness, reciprocity, and envy. These alternative social preferences have a big impact on how games will be played, so the section is closely connected with Chapter 5.

Behavioral economics introduces a new role for government intervention in the market, a paternalistic role leading the government to try to correct mistakes made by market participants. Needless to say, this perspective has been strongly challenged by some neoclassical economists. We mention the debate here and some of the points raised without taking sides. The continued debate as well as the continued revision of our understanding of behavioral economics may be a bit frustrating to students who want “the” answer, but on the other hand gives them a window into economics as it really is, an evolving science.

B. Lecture and Discussion Suggestions

There are a number of valid approaches to the material in this chapter. One would be to omit it entirely. Instructors were already pressed for time before the addition of this chapter, so there may well be no time at all for it. The chapter is self-contained, so there is no loss to the rest of the material if it is eliminated. Another reason for omitting the chapter is if the instructor prefers to stick to a single, elegant model of economic behavior, the neoclassical model, and not “muddy the waters” with alternative models, especially if the best alternative model is still far from settled. Again, the book fits perfectly with this approach since it is only this last chapter that departs from the neoclassical approach so can be omitted seamlessly.

For instructors who want to include at least some coverage of behavioral economics, there are a number of approaches. The chapter can be covered as a self-contained unit, perhaps toward the end of the term. The students might be assigned a popular book on behavioral economics, for example, Thaler and Sunstein’s recent popular book, *Nudge*,[[1]](#footnote-1) as outside reading, perhaps as the subject of a term paper to be worked on fairly independently.

Another approach would be to sprinkled the material throughout the term to enrich various other topics. The material on limits to cognitive ability could be mentioned when the topic of uncertainty (Chapter 4) is covered, noting that decisions under uncertainty are complex and may be the source of biases. The material on limits to self-interest could be added to a module on game theory (Chapter 5), discussing for example how the predictions of Nash equilibrium would change if players care about fairness in addition to their own monetary payoff. The material on hyperbolic discounting could enrich the discussion of standard discounting in Chapter 14.

C. Glossary Entries in the Chapter

 Altruism

 Behavioral Economics

Exponential Growth

Framing Effect

 Hyperbolic Discounting

Neoclassical Economics

 Prospect Theory

 Reciprocity

SOLUTIONS TO CHAPTER 17 PROBLEMS

**17.1** **a.** The first prize is 100,000*d*, and the second is 2*d*-1/100 (in dollars).

**b.**



**c.** The curves cross between day 29 and 30. The first prize is better for shorter time spans and the second prize for longer time spans.

**17.2** **a.** 







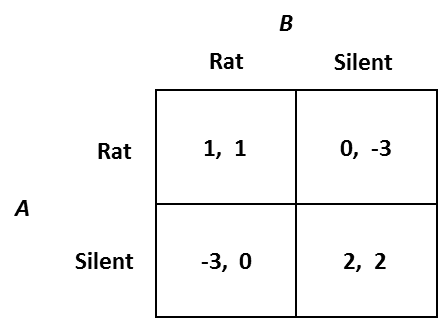
**b.** Prefer *A*.

**c.** Prefer *D*.

**d.** Consistently prefer the gamble that involves a lower probability of winning anything but some change of winning the big prize of $5,000. Experimental evidence is not this consistent, for some reason being attracted to the sure thing in gamble *B*.

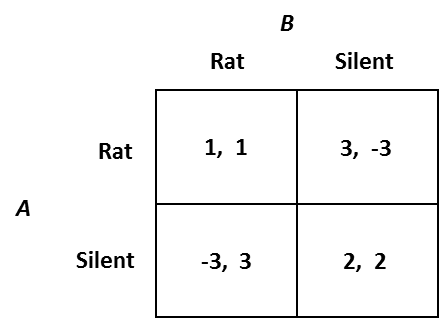
**17.3** **a.** Both play Rat.

**b.**



Now there are two equilibria: both play Rat and both play Silent.

**c.**

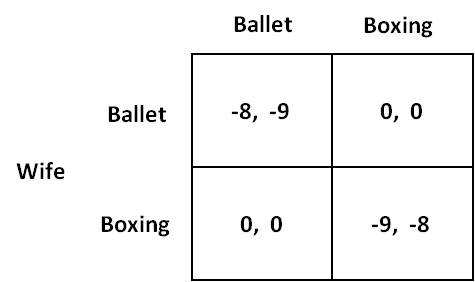
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Both play Rat, as in part a again.

**17.4** **a.** In one Nash equilibrium, both go to Ballet, and in the other both go to

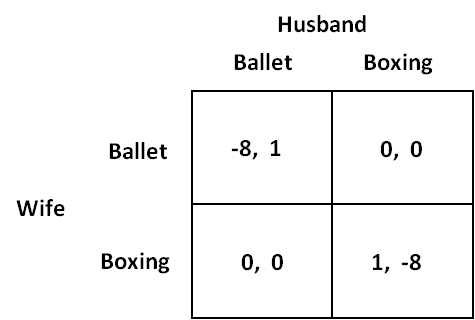
Boxing.

**b.**



Now players prefer “discoordinating.” In the two pure-strategy Nash equilibria, one player goes to Ballet and the other goes to Boxing.

**c.**

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The game has one Nash equilibrium: the wife goes to Boxing and the husband to Ballet.

**17.5** **a.** Player 1 makes a low offer; player 2 accepts either offer.

**b.**



The equilibrium is the same as in part a.

**c.**



Now, besides the equilibrium in part a, there is another one in which player 1 makes an even offer and 2 accepts either offer.

**d.**



In equilibrium, 1 offers an even split and 2 accepts any offer. Paradoxically, 2 gains a higher monetary payoff but lower utility than if he or she received the low offer.

**17.6** **a.** The number of combinations of 24 jars taken two at a time is 24 × 23 ÷ 2 = 276. To see this calculation, there are 24 ways to choose the first jar and 23 ways left to choose the second, but order within the pair doesn’t matter, so we have to divide by 2.

**b.** In the first group, there are four to choose from, resulting in 4 × 3 ÷2 = 6 comparisons. In the second group there are two to choose from, resulting in 2 × 1 ÷ 2 = 1 comparison. Proceeding in this way through all the groups, there are 6 + 1 + 1 + 1 + 10 + 0 + 1 + 1 + 6 = 27 comparisons, leaving 9 to compare across groups. There are 9 × 8 ÷2 = 36 comparisons to be made among the 9 that are best from each group. In all, 27 + 36 = 63 comparisons need to be made. This is a significant reduction from the 276 from part a.

**17.7** **a.** Will plans to study, and also carries out his plan, if *s* < *b*.

**b.** Becky plans to study if *s* < *b*, but she only follows through if *s* < *wb*.

**17.8** **a.** Present discounted value at planning stage (period 1) of Mr. Consistent’s utility flow from exercise = (.5)(-100) + (.25)(250) = 12.5. Since this value is positive, he would plan to exercise. At the stage when the exercise needs to be undertaken (period 2), the present discounted value = (1)(-100) + (.5)(250) = 25. Since this value is positive, he would carry out the plan.

**b.** Present discounted value at planning stage (period 1) of Mr. Hyperbolic’s utility flow from exercise = (.35)(-100) + (.25)(175) = 8.75. Since this value is positive, he would plan to exercise. At the stage when the exercise needs to be undertaken (period 2), the present discounted value = (1)(-100) + (.35)(250) = -12.5. Since this value is negative, he would not exercise, contrary to his plan.

**c.** As seen in b, he obtains a present discounted value of -12.5 if he exercises, so *x* ≥ 12.5 would induce him to exercise.

**17.9** **a.** Pete’s expected utility from gamble *A* is 10,000 + (1/2)(250) – (1/2)(2)(100) = 10,025 and from gamble *B* is 10,030, so he chooses *B*.

**b.** Pete’s expected utility from gamble *C* is 10,100 + (1/2)(150) – (1/2)(2)(200) = 9,975 and from gamble *D* is 10,100 – (2)(70) = 9,960, so he chooses *C*.

**c.** *A* yields the same wealth levels as *C*. *B* yields the same as *D*.

**17.10****a.** Setting *QS* = *QD* yields *P*/2 = 100 - 2*P*, implying *P*\* = 40, *Q*\* = 20, *PS*\* = 400, *CS*\* = 100, *W*\* = 500. (The figure in below part b shows the triangles whose areas equal give *PS*\* and *CS*\*.)

**b.** Setting  (where  is mistaken rather than true demand) yields *P*/2 = 200 - 2*P*, implying *P*\*\* = 80 and *Q*\*\* = 40. The deadweight loss triangle is shown in the figure below. Relative to the efficient outcome with *Q*\* = 20, an excess of 20 units are produced (viewed from the perspective of the true demand curve). The cost of these units is given by the area under *S* and the consumer surplus they generate is given by the area under *D*. The difference is deadweight loss, the area of the shaded triangle. This area is (1/2)(20)(50) = 500 = *DWL*.



**c.** A tax of 50 will shift the mistaken demand curve *D*’ down to now overlap with the true one, *D*.

**d.** Imposing a tax of 50 in a market in which true demand is *D*’ leads to the shaded deadweight loss triangle in the figure below. This area is (1/2)(20)(50) = 500 = *DWL*. So if the government is mistaken, it can generate deadweight loss of the same magnitude as from consumer mistakes.



1. R. H. Thaler and C. R. Sunstein, *Nudge: Improving Decisions about Health, Wealth, and Happiness* (Yale University Press 2008). [↑](#footnote-ref-1)