Microeconomics and Behavior 10th edition Frank Solutions Manual

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Chapter 1 Thinking Like an Economist

Answers to Review Questions

1. The opportunity cost of reading a novel this evening is not being able to do whatever you would have done instead. If you would have watched TV, then your opportunity cost is not watching TV; if you would have studied economics, then your opportunity cost is not studying economics.

2. The tuition is a sunk cost and so your roommate should consider only costs and benefits relevant now and in the future. If he will be better off in life by leaving school now, he should not let the tuition make the rest of life less meaningful.

3. Driving an automobile (which pollutes the atmosphere) imposes an external cost on others. Building a house which others admire presents an external benefit. Inventing something which is new and useful, but which cannot be patented presents another external benefit.

4. A 50-year-old presumably is in a higher pay bracket than a 20-year-old so the opportunity cost of leaving the job is greater for the older person.

5. By definition, a sunk cost is a cost that is incurred regardless of one's current decisions.

6. Economists generally argue that people act in their own self-interest even if they do not consistently evaluate costs and benefits. The analogy most frequently used (from Milton Friedman) is that of a pool player who knows how to sink his shots without having studied physics.

Answers to Chapter 1 Problems

1. Let $X be the amount Jamal earns in a day on his job. The cost to Jamal of going to the park is then $15 (admission fee) + $5 (gas & parking) + $10 (the lost satisfaction from not working) + $X (lost salary) = $30 + $X. The benefit of going to the park is $45. He should go to the park if his salary is $10/day, and shouldn't go if his salary is $20/day. At a salary of $15/day, he is indifferent between going and not going.

2. If Tom kept the $200 and invested it in additional mushrooms, at the end of a year's time he would have an additional $400 worth of mushrooms to sell. Dick must therefore give Tom $200 of interest in order for Tom not to lose money on the loan.

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3. It is reasonable to assume that everybody has decreasing satisfaction from each pound of food as consumption level increases. In University A, everybody will eat until the benefit from eating an extra pound of food is equal to $0, since this is the cost of each pound of food. In University B, people will eat until the benefit decreases to $2. Thus, everybody will eat less if they are at University B. So, not just average consumption but also each individual's personal consumption will be lower. Note that to reach this conclusion we need the assumption that the students at both universities have the same appetites.

4. The only costs that vary with mileage are fuel, maintenance, and tires, which are average $0.25/mile (cost of driving for fuel $1,200/10,000 = $0.12, for maintenance $1,100/10,000 = $0.11, and tires $200/10,000 = $0.02). The cost of driving will thus be $250 (= $0.25 × 1,000), and since this is less than the cost of the bus, you should drive.

5. The band and hall rental fees are fixed costs. The caterers charge at the rate of $7/guest ($5 catering bill/$2 drink). So, an extra 10 guests will increase total costs by only $70.

6. You gave up the $60 (= $1,000 × 0.06) you would have earned if the money was in your savings account. This assumes that your tax rate on interest earned is zero.

7. Monica has already bought her ticket, so her cost-benefit calculation when it is time to go is as follows: benefit of seeing game vs. cost of the drive + time costs, etc. Rachel, not having bought her ticket, faces a different calculation: benefit of seeing game vs. $30 + cost of the drive + time costs, etc. Since the benefits are the same in each case, but the costs are larger for Rachel at the moment of decision, she is less likely to go.

8. A plane of either type—large or small—should use the state-of-the-art device if the extra benefits of that device exceed its extra costs. Because the device will save more lives in large planes than in small planes, its benefits are larger in large planes than in small ones. Your original recommendation was presumably based on the calculation that the benefits for the larger planes justified the extra cost but did not do so in the case of the smaller planes. Airline passengers are like other people insofar as their willingness to invest in extra safety is constrained by other pressing uses for their scarce resources. Where extra safety is relatively cheap, as in large planes, they will rationally choose to purchase more than when it is relatively more expensive, as in small planes.

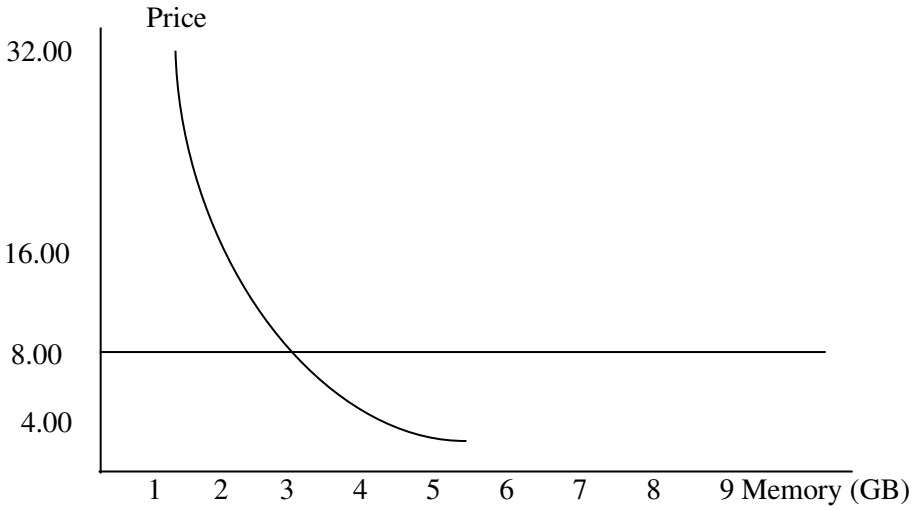
9. With more than a week to go, the $100 driver's fee and the $50 bus cancellation fee are sunk costs. If the trip takes place, the additional costs will be the remaining $450 of the bus fee plus the $75 in tolls, for a total of $525 in additional costs. If at least 30 tickets will be sold, it makes sense to continue the trip, since total revenue ($540) will exceed the additional cost.

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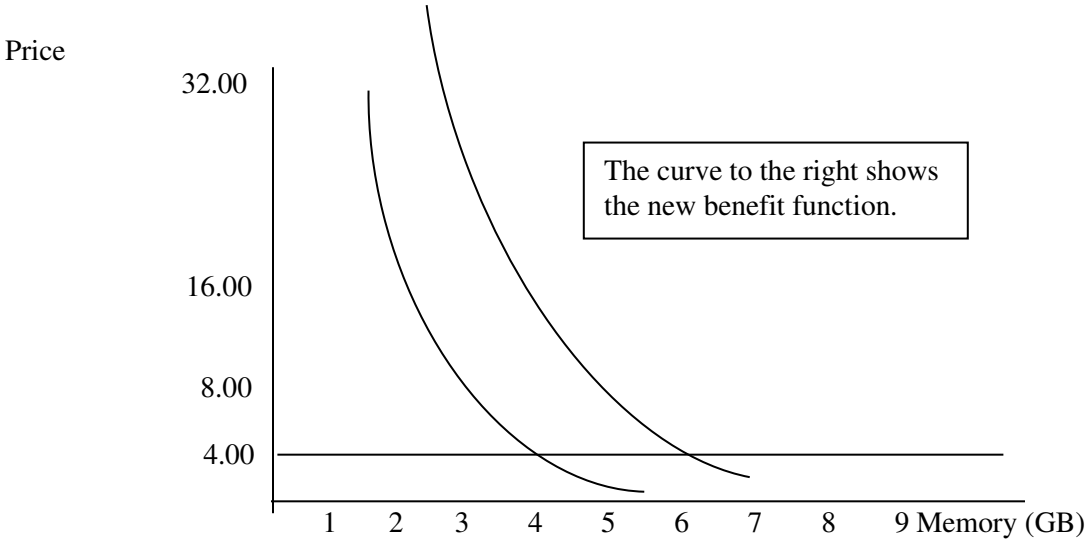
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10. Assuming that residents are required to recycle cans, they simply cannot put them with the regular trash. In the first case, the fixed cost of $6/week is a sunk cost. Therefore, for the residents, the cost of disposing an extra can is $0. In the tag system, the cost of disposing an extra can is $2, regardless of the number of cans. Therefore, since the costs are higher and the benefit of setting out a can is assumed to be the same in both cases, you expect less cans to be collected in the tag system.

11. The benefit of the 1st gigabyte is $32, the 2nd is $16, the 3rd is $8, the 4th is $4, the 5th is $2, the 6th is $1, the 7th is $0.50 and the 8th is $0.25. At a cost of $8, you should purchase 3 gigabytes. At higher levels of benefit, the benefit is less than the cost. At lower levels, benefit exceeds the cost.



12. The benefit of the 1st gigabyte is $1,600, the 2nd is $800, the 3rd is $400, the 4th is $200, the 5th is $100, the 6th is $50, the 7th is $25, and the 8th is $12.50. At a cost of $50 and your willingness to pay $800 for the first gigabyte, you should purchase 5 gigabytes. When your benefit rises to $1,600 for the first gigabyte, you consume 6 GB of RAM.



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13. False. The fact that Dana would have chosen the party before she bought her ticket means that she prefers a party to an event that costs $40. Now her choice is between two events that she can attend with no further payment.

14.

	Taylor Swift	Bruno Mars
Benefit	B_p	B_r
Cost (initial)	$75	$75
Cost (final)	$75	$50

In the problem, we are given that

$$B_p - \$75 > B_r - \$75$$

or

$$B_p > B_r \qquad (*)$$

Now, we need to find out whether the following is true or not:

$$B_p - \$75 > B_r - \$50$$

which is the same as

$$B_p > B_r + \$25 \qquad (**)$$

Notice that (*) does not necessarily imply (**). For example, if B_p= $80 and B_r= $60, then (*) holds while (**) does not. So we can conclude that you should not go to the Taylor Swift concert in the above scenario if you are a rational utility maximizer.

Your decision will depend on the relative values of B_p and B_r. The fact that you would have bought a Taylor Swift ticket means that the benefit of attending the Taylor Swift concert, denoted B_p, must be greater than $75. Let B_s denote the benefit of going to the Bruno Mars concert. The fact that you would have chosen the Taylor Swift concert before receiving your Bruno Mars concert ticket means that $B_p > B_s$. But this does not imply that you should go to the Taylor Swift concert. Suppose $B_p = \$80$ and $B_s = \$60$. When you now choose between the two concerts, the opportunity cost of attending the Bruno Mars concert is $50, so the net benefits of attending each concert are given by $B_d - \$75 = \$5$ and $B_S - 50 = \$10$, which means you should go to the Bruno Mars concert. So FALSE.

15. Safari provides $10,000+/yr more enjoyment than a business job. $70,000 = gross benefit of business job salary.

Costs of Business Job:
10,000 opportunity cost of loan
50,000 lost salary as safari leader
10,000 + lost enjoyment from safari job
$70,000 + total cost of taking of business job > benefit, so don't take the job.

If business salary was $70,001/yr, he would have taken it.

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16. True. If you got $20,000 for the Equinox and paid that plus $5,000 more for the Explorer, the entire Explorer expense would have cost you $25,000. Since you have already shown that you did not want the Explorer for $25,000, why would you spend that for it now?

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Chapter 1 Thinking Like an Economist

Chapter Summary

The title of this chapter is "Thinking Like an Economist," and the chapter gets students to think about economic problems from the start. The text begins by explaining the notion of scarcity and choice; it makes clear that time and money are not the only scarce resources. The concept of choice leads directly to the weighing of marginal costs and marginal benefits. The answer to the question, Should I do activity X? is: if the benefits of that activity are greater than the costs [if B(X) > C(X)], then do X; otherwise don't. Understanding the importance of marginal analysis is central to sound economic reasoning.

From here, the chapter points out the pitfalls that are likely when making decisions. Ignoring implicit opportunity costs, failing to ignore sunk costs, and confusing average and marginal distinctions are common mistakes made when making choices.

The next few sections develop the notion of rationality and the rational economic person. The rational choice approach is helpful in understanding and modeling some behavior, but it is not a prescription for practical living.

The chapter concludes with a discussion of positive and normative economics and the distinction between microeconomics and macroeconomics.

Chapter Outline

The Cost-Benefit Approach to Decisions
The Role of Economic Theory
Common Pitfalls in Decision Making
- Pitfall 1: Ignoring Implicit Costs
- Pitfall 2: Failing to Ignore Sunk Costs
- Pitfall 3: Measuring Costs and Benefits as Proportions Rather Than Absolute Dollar Amounts
- Pitfall 4: Failure to Understand the Average-Marginal Distinction

Using Marginal Benefit and Marginal Cost Graphically
The Invisible Hand
Self-Interest and Homo Economicus
The Economic Naturalist
Should You Think Like an Economist?
Microeconomics and Macroeconomics
Summary

Learning Objectives

LO1: Explain and apply the cost-benefit principle.
LO2: Explain the uses and limitations of economic models.
LO3: Describe the four common decision pitfalls.

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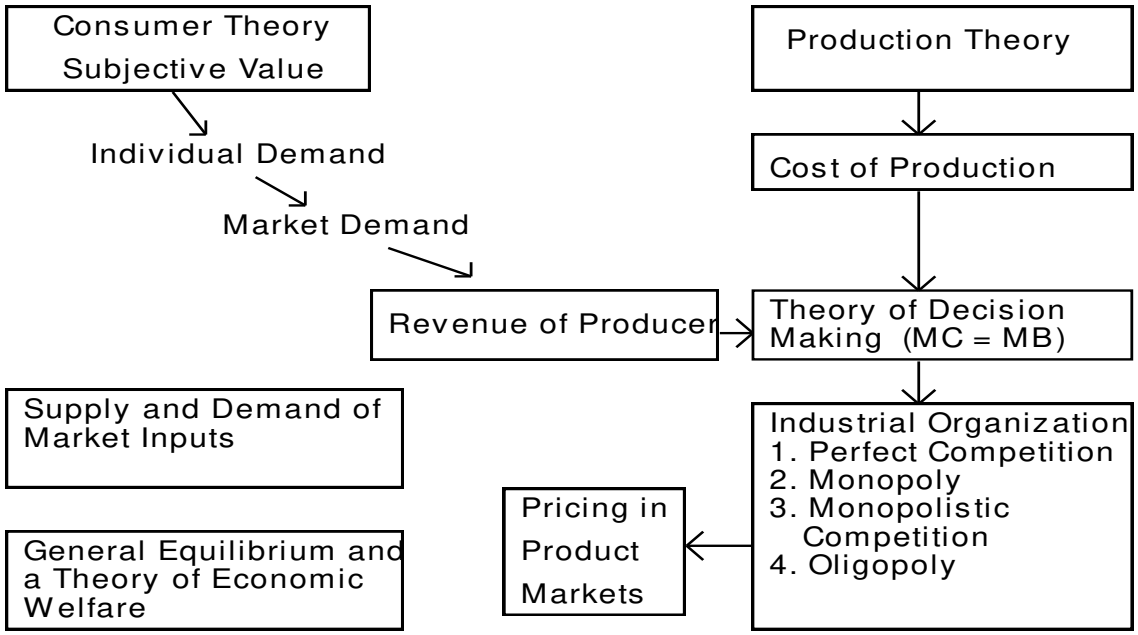
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LO4: Translate quantitative information about costs and benefits into graphical form.
LO5: Describe Adam Smith's invisible hand theory.
LO6: Give several clear examples of how basic economic principles can be used to explain patterns of behavior observed in everyday life.
LO7: Explain the difference between positive and normative theories.
LO8: Explain the difference between microeconomics and macroeconomics.

Teaching Suggestions

1. Begin the term with a view of the "forest"– the course seen as a whole. It is very easy to get lost in the "trees" of individual topics, especially when it takes three weeks to derive a demand curve. I like to use a flow-chart which I come back to at various times during the term to make sure students know where we were and where we are going next. The chart below is an example of what might work.

The Forest and the Trees



2. One of the strengths of *Microeconomics and Behavior* is its recognition that economic thinking does not predict as much human behavior as the "rational choice" stereotype might have students believe. This means that the methodology of economics is very important to understand. I find it important to stress at least three very important assumptions of the rational choice model.
   a. Behavior is not random.
   b. People have reasonably simple objectives common to most.
   c. People behave rationally without regard to emotions that detract from rationality.

   Where these givens are not present, the rational choice models will fail. To emphasize this point I set up a game with the students where they each have a

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partner. I pretend to have a lottery machine with seven ping-pong balls numbered 1,1,2,2,3,4,5. One student in each pair will pick a number from one to five, and then the other student will pick a number from the same set of numbers. I then pick a ball, and the student with the closest number to the one picked will get 100 fictitious dollars (real dollars for rich departments). If the students are equidistant from the selected ball or pick the same number, they will split the 100 dollars evenly.

A rational choice model will predict that both students will pick a 2 because the expected value of the 2 is $50, which is higher than the expected value of any other option. For example, everyone should predict that their partner will pick a 2, so a 1 would bring an expected return of 2/7 of $100 or $28. If a 3 is picked, the probability of winning is 3/7 or still less than $50. Consequently each should pick number 2. It is interesting when the numbers are tallied because invariably some, usually a minority, pick numbers other than 2. The issue now becomes, why did the model predict incorrectly for those people? Students either must have uncommon objectives or are irrational. A discussion follows where students admit they were irrational (could not calculate the expected value right in the time allotted) or had objectives like (a) they wanted their partner to have the most money, or (b) they were risk lovers and hoped to win a long shot and get the entire $100. This discussion points out the risk aversion assumption underlying rational choice theory, as well as the notion that uncommon objectives and irrationality are not as rare as we may sometimes think.

If time permits, it is helpful to have the students read Friedman's classic methodological article and then rate this ping-pong model on the characteristics of robustness, simplicity, and fruitfulness. Point out that the normative-positive distinction is not as clear as it is sometimes made out to be. There are value-laden issues underlying the assumptions of the model in the first place.

Stumbling Blocks for Students

1. Economists assume that students really want to "think like economists." Far better to assume that they will have to be convinced that such thinking is important. All of the examples in this chapter are showing not only how economists think, but why students may want to think that way also. Doesn't the mind work all this out unconsciously? Can't I trust my gut feeling about whether I should go skiing or not? Are we simply predicting the obvious? Point out that counter intuitive outcomes in economic thinking are plentiful.
2. Cost-benefit analysis of daily events seems too mechanical to most students. Everyone has enough Veblen in them to feel put off by the quantification of quality of life trade-offs. Perhaps they might understand a bit when they consider how carefully they analyze decisions like marriage, religion, and occupation. On what basis do the students decide whether or not they should buckle their seat belts?
3. It is not immediately obvious to most that there is a vast difference between marginal and total or average analysis. The definitions will need to be illustrated with many

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examples. Later on when production and cost topics are studied the rewards of working with marginal analysis here will pay off.

4. Be sure to clarify what a reservation price is. It is not a household word to students since each customer pays the same price for a commodity in single price markets. The concept is helpful later when consumer surplus and welfare are considered.

Additional Problems

1. Bob has decided to go skiing for the weekend, but (absentminded professor that he is) he has forgotten his skis. He is considering three options: (1) stay indoors and read economics texts; (2) ski for two days and read economics texts one day; (3) ski for three days and forget economics. The costs of skiing are as follows:

Transportation	$100
Lodging	$200
Ski pass	$ 20 per day
Ski rental	$ 25 per day

   Bob has also found out that the resort has a special three-day pass including ski rental for $75. Assume that Bob has already reached the ski slopes and that he cannot cancel his room reservations.
   a. What are the costs of the three options?
   b. What is the cost of skiing a third day?
   c. Suppose Bob figures it is worth about $30 a day for him to ski. What should he do?

2. Joe is a full-time student who moonlights at night washing dishes. He makes $8 an hour after taxes, but he's decided that his nocturnal activities are hurting his grades. He figures that by studying two extra hours a week he could raise his grade in economics from a B to an A next semester. If a semester is 15 weeks long and if Joe is unwilling to give up any other activities, how much will his A cost?

3. Barbara and Zellah hope to go to Miami Beach for spring break for seven days. Since both are rational economic women, they have calculated the costs of flying vs. driving.
   Flying: Airline ticket is $150 per person, and a car rental is $25 per day.
   Driving their own car: Gas is $100, lodging to Miami Beach and back is $150 for a double room, and wear on the car is $200.
   a. Which option costs less?
   b. Zellah also says that she hates driving. Should one include this distaste as a cost?

4. During the gasoline crunch in the mid and late seventies, the price of gas was kept below the market-clearing price. Often this policy resulted in long lines. Assume two possible states of the world in the seventies: (1) Gas costs $1 a gallon with no waiting; (2) gas costs $.60 a gallon but one must wait for half an hour to get it.

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a. Trevor Goodwood, an attorney at a prestigious law firm, hates waiting in line. He figures his time is worth $100 an hour. His gas tank holds 20 gallons. How much does gas cost per gallon in the two scenarios given above? Which would Trevor prefer?
b. Howard Outoluck is unemployed and figures his time is worth nothing. He also has a 20-gallon tank. Which option does he prefer?

5. Jack and Jill are going on a date to Funland, a local amusement park which has recently opened. Funland charges $10 admission to the park plus $2 for each ride. Each ride requires a 20-minute wait and lasts 10 minutes. Jack and Jill figure that her time is worth $18 an hour and his is worth $12.
   a. If they each decide to take ten rides what is the total cost for Jack? For Jill?
   b. What is the cost of one additional ride for both Jack and Jill?

6. Rational choice theory assumes that you calculate the costs and benefits of getting out of bed every morning. When the benefits outweigh the cost of getting up you get up. Yet most never consciously make such calculations. How does Milton Friedman justify economic models that make such unrealistic assumptions?

7. Paul came back to the office frustrated because his committee meeting had gone 15 minutes overtime. Later he flew to Japan on business and emailed how pleased he was that his flights went well and that he arrived only 15 minutes late. In each case he lost 15 minutes so why the different reaction?

8. Energy companies fracking for fuel are facing strong opposition from environmental groups who oppose such action. If both groups have access to the same data but come to such different conclusions, is one group irrational?

9. Lipitor, a patented cholesterol lowering drup, sold for over $3 a pill for many years. Then when the patent expired the generic form called Atorvastatin is now being given for free by some pharmacies and sold for very little by others. Both Lipitor and Atorvastatin are essentially the same and each pill costs only pennies to produce. How can you justify a patent that eliminates competition and makes an important medine so expensive for so long?

Answers to Additional Problems

1. a. The opportunity cost of option one is zero since transportation and lodging represent sunk costs. Bob must, however, give up skiing in order to read economics. Option two costs $75 since the three-day pass is cheaper than the per

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day rate for two days; in addition Bob gives up one day of studying economics. Option three costs $75 plus the loss of three days of studying economics.

b. The loss of one day to study economics.

c. Ski all three days since $75 for three days works out to $25 a day.

2. $8 × 2 hr per week × 15 weeks in a semester equals $240.

3. a. Option one costs $300 plus $175 = $475. Option two costs $450.

b. Yes. The savings from option two is only $25. If Zellah is willing to pay $25 to avoid driving, then they should fly. (Note: Flying will cost Barbara an additional $12.50; Zellah could pay Barbara this amount.)

4. a. Under the first scenario gas costs $1 per gallon. If Trevor must wait half an hour, then it costs him $50 plus $12 for the 20 gallons; his cost per gallon is $3.10. Thus Trevor prefers to pay $1.00.

b. Howard doesn't mind waiting in line; he prefers to pay $.60.

5. a. Jack: $10 admission plus 10 × $2 for each ride plus $12 × 5 for his time; the total cost is $90. Jill: $10 admission plus 10 × $2 for each ride plus $18 × 5 for her time; the total cost is $120.

b. Jack: $2 plus $12 × 1/2 for his time; it costs $8. Jill: $2 plus $18 × 1/2 for her time; it costs $11.

6. Friedman claims that you act as if you made the calculations so that someone who has good data on your preferences and opportunity costs can estimate your costs of lying in bed and compare them to your benefits of getting up and predict with reasonable certainty when you will get up.

7. The committee was supposed to last one hour and the flights 14 hours. Our minds work with proportions in most cases and so Paul's reactions are inconsistent with rational choice theory.

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8. This problem illustrates the difficulty of separating positive and normative considerations, especially when social costs are present. Where future effects are involved, uncertainties are present, aesthetic preferences vary and the value of life must be assessed, it is hard to related to data as value free. Thus each side may claim rationality given their view of the data and the interpretation of its meaning.

9. The cost of the pill now is only its marginal cost. Not counted are the research and development costs involved in producing and testing the drug for effectiveness and safety. Only about one in eight drugs survive the testing so there are large development costs that must be considered in the average cost and once they are spent they are sunk costs. The patent is an encouragement to firms to spend the upfront money required to find a successful drug. Once the full costs are recovered the price can fall to its marginal cost. It is true that there is no easy way to predict when those costs will be recovered.

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