CHAPTER 1 | Economics: Foundations and Models

SOLUTIONS TO END-OF-CHAPTER EXERCISES

Review Questions

1.1 **Three Key Economic Ideas (pages 2–5)**
Learning Objective: Explain these three key economic ideas: People are rational; people respond to incentives; and optimal decisions are made at the margin.

1.1 "People are rational" is the assumption that decision makers explicitly or implicitly weigh the benefits and costs of each action and then choose an action only if the benefits are expected to outweigh the costs. "People respond to incentives" means that consumers and firms consistently respond to economic incentives. "Optimal decisions are made at the margin" means that most decisions are not "all or nothing" but involve doing a little more or a little less of an activity. Therefore, the optimal decision is to continue any activity up to the point where the marginal benefit equals the marginal cost.

1.2 Scarcity is the situation in which unlimited wants exceed the limited resources available to fulfill those wants. Economics is the study of the choices consumers, business managers, and government officials make to attain their goals. Scarcity is central to economics because scarcity requires people to make choices about how to use their resources to best fulfill their wants.

1.2 The Economic Problems All Societies Must Solve (pages 5–9)
Learning Objective: Discuss how a society answers these three key economic questions: What goods and services will be produced? How will the goods and services be produced? Who will receive the goods and services produced?

2.1 Scarcity implies that every society and every individual faces trade-offs because wants are unlimited, but the ability to satisfy those wants is limited. Societies and individuals cannot have everything they want, so they have to make choices of what to have and what not to have.

2.2 The three economic questions that every society must answer are: 1) What goods and services will be produced? 2) How will the goods and services be produced? 3) Who will receive the goods and services? In a centrally planned economy, the government makes most of these decisions. In a pure market economy, almost all of these decisions are made by the decentralized interaction of households and firms in markets. In a mixed economy, most economic decisions result from the interaction of buyers and sellers in markets, but government plays a significant role in the allocation of resources.

1.3 Economic Models (pages 9–12)
Learning Objective: Understand what economic models are and aren't, and why they are a good idea.

3.1 Economists use models for the same reason that any other scientist (and indeed everyone else) does—to make a complicated world simple enough that it can be understood and analyzed, so that questions about it can be usefully answered. Useful models will generate testable predictions. If these predictions are consistent with economic data, then the model isn't rejected and can be used to understand the economy. Testing models with data can be very difficult, however, because the economy is always changing, and it is difficult to conduct controlled economic experiments.

3.2 In arriving at a useful economic model, these five steps are followed: 1) decide the assumptions to be used; 2) formulate a testable hypothesis; 3) use economic data to test the hypothesis; 4) revise the model if it fails to explain the economic data; and 5) retain the revised model to help answer similar economic questions.

3.3 Positive economic analysis concerns what is; that is, it deals with how the economy actually behaves. Normative economic analysis concerns what ought to be. Economics is mainly concerned with positive analysis—conceptualizing and measuring the costs and benefits of different courses of action. Decision makers (including voters and government officials) can use the trade-offs and costs and benefits identified by positive economic analysis in normatively deciding what course of action should be taken.

1.4 Microeconomics and Macroeconomics (page 12)
Learning Objective: Distinguish between microeconomics and macroeconomics.

Review Question

4.1 Microeconomics is the study of how households and firms make choices, how they interact in specific markets, and how the government influences their choices. "Micro" means small, and microeconomics deals with individual decision makers. Macroeconomics is the study of the economy as a whole. "Macro" means large, and macroeconomics deals with economy-wide outcomes, such as the inflation rate, the unemployment rate, and the economic growth rate.

Problems and Applications

1.1 Three Key Economic Ideas (pages 2–5)
Learning Objective: Explain these three key economic ideas: People are rational; people respond to incentives; and optimal decisions are made at the margin.

1.1 As noted in the chapter, the economic incentive to banks is clear—it is less costly to put up with bank robberies than to take these additional security measures.

1.2 **a**. Students face scarcity of time, like everyone else, and respond to the incentives of the teacher's grading system. Students have more incentive to put their efforts into the parts of the course that have the most weight in the grading system.

b. Too little weight on outside readings or the like give students little incentive to read and master the material. Students will put less effort in the parts of the course that have little effect on their grades.

    c. Quizzes over assigned readings would give students an incentive to come to class having read the upcoming material. Some teachers give preparation assignments where students have to read and answer questions about the upcoming material, and over the course of the semester students have to successfully complete a certain percentage of the preparation assignments to qualify for an A, or B, or other grade in the course.

1.3 The government makes payments under the UCCB in an effort to offset the costs of childcare, to allow more parents, particularly women, to return to work after having a child. The thinking is that by reducing the cost of childcare, more people will be encouraged to have children. Most people are unlikely to change the number of children they have. $160 a month is not a large enough payment to change the benefits and costs to most people, and therefore not enough to change people's decisions about having children.

1.4   **a.** In deciding whether or not to go to the gym on a specific day, most people aren't comparing the benefits of an active lifestyle and the cost of the gym membership. They're comparing what they miss out on and the relatively small benefit any single workout will have on their overall health. By implementing a simple payment system, the researchers increase the benefit of a small number of trips to the gym. Further thought: the benefits of going to the gym tend to be concentrated a long time after the decision to go to the gym is made. Some of those benefits will be received years in the future. By offering cash payments in the relatively near term the researchers offer a benefit that can be received in the same time frame as the costs of going to the gym are paid.

    b. Those that do not respond to the monetary incentive to go to the gym clearly value their other options more than the health benefits and monetary reward received by going to the gym. Consider a student who is working to pay for their education. The payment received by going to the gym is likely less than the payment received by going to work. In short – the incentive wasn't big enough.

1.5 Jill is correct.
The difference between the grade before and after watching an extra episode is exactly the same as knowing the change in the grade.

1.6 Your friend is failing to think at the margin. It doesn't matter how much time your friend has already spent studying psychology. What matters is the marginal benefit to be received from studying psychology relative to the marginal cost, where cost is measured as the opportunity cost of lower grades in other subjects. If the course is required, that may raise the marginal benefit.

1.2 The Economic Problems All Societies Must Solve (pages 5–9)

Learning Objective: Discuss how a society answers these three key economic questions: What goods and services will be produced? How will the goods and services be produced? Who will receive the goods and services produced?

2.1 Yes, even Bill Gates faces scarcity because his wants exceed his resources. Gates has established a foundation with billions of dollars to spend on worthy causes like eradicating malaria and reducing homelessness. However, there are an unlimited number of worthy causes that Gates desires to fund, so even he faces scarcity. Secondly, even Gates has only twenty-four hours in a day, so he must make choices about how to spend his scarce time. Everyone faces scarcity, because human desires are virtually unlimited. Because the world's resources are limited, the only way to not face scarcity would be to reduce your wants to be less than your resources.

2.2 a. It is doubtful that centrally planned economies have been less efficient purely by chance. The underlying reason seems to be that centrally planned economies don't provide as strong incentives for hard work and innovation as market economies do. In addition, the people running centrally planned economies cannot make the most efficient decisions because they don't have the information that is in the minds of all the decentralized decision makers in a market economy.

b. You might still prefer having a centrally planned economy if you considered it to be more equitable. (Also, you might prefer a centrally planned economy if you were in charge.)

2.3 A complete explanation for the connection between majoring in economics and success in business would involve many factors. But we can say that economics teaches us how to look at the trade-offs involved in every decision we make. Those who cannot understand the costs of an action and weigh them against its benefits are unlikely to make good decisions. Climbing the corporate or governmental ladder requires making a wider and wider array of such decisions.

2.4 a. The groups that are most likely to get the tickets will be those for whom the expected marginal benefits of going to the radio station on Monday morning are greater than the expected marginal costs. These might include people who have a very low opportunity cost of traveling to the radio station and standing in line, such as people who don't have a job in the morning and those who live or work very close by. These might also include people who see a large benefit from going to get the tickets, such as die-hard LMFAO fans or professional ticket resellers ("scalpers").

b. The major opportunity cost of distributing the tickets this way is the cost to the people who attempt to get the tickets—the cost of travel to radio station, the activities that cannot be done (such as earning money at work) while standing in line, and the costs to all those people who try to get tickets but don't get there soon enough. There's also the cost of people blocking traffic in and around the radio station.

c. This isn't an efficient way to distribute the tickets because it wastes so much time. Perhaps the most efficient way to distribute the tickets is to hand them out unannounced to people walking by—this would take only a few minutes. Alternatively, the radio station could sell them back to the concert promoter and have them distribute the tickets. Auctioning off the tickets to the highest bidder would ensure that those who were willing to pay the highest price would obtain the tickets.

d. Equity is hard to define. Some people will see this as equitable, because only the deserving, true fan will put up with the hassle of getting the tickets. Some people might also argue that this system is equitable because the tickets are being distributed for free, making it possible for people with very low incomes to obtain them. Others will disagree, saying that people with a strong desire to obtain the tickets, but who are unable to be at the radio station at the designated time, would have no chance to get the tickets. Other people might argue that the system was not equitable because no money was raised for the concert promoter, who deserves to get some of the benefits of selling the tickets because they took all the risks.

1.3 Economic Models (pages 9–12)

Learning Objective: Understand what economic models are and aren't, and why they are a good idea.

3.1 Economists assume that people are rational in the sense that their actions are intended to achieve their goals. This does not mean that economists assume everyone is a genius or always makes the "right" decision in every circumstance. It does mean that economists assume that the actions of consumers and businesses reflect their attempts to achieve their goals.

3.2 The problem with Dr. Strangelove's theory is that it cannot be tested unless we can devise a way to measure the emission of these subatomic particles, which seems to be impossible because they don't exist in our universe. Because we cannot test the model's predictions, it is not very useful to us; even though it might be true, we have no way of knowing.

3.3 The economic data that would be most useful would be to identify those who are unemployed due (largely) to the increase in the minimum wage and to identify those who are able to enjoy the improved income resulting from increased wages. Understanding the number and nature of those who lose and those who gain can help us understand the positive side of the issue. Unfortunately this data will not resolve the normative side of the data debate, as the normative side of the debate requires people to make an assessment over which group is more important.

3.4 **a.** Tim Hortons and other coffee shops will likely respond to the reduction in the amount of coffee available by increasing the price they charge their customers.

b. Centrally planned economies tend to deal with shortages in two different ways. First, when goods are scarce in centrally planned economies the central planning committee rations the scarce resource – issuing a small share to each person or restricting the amount any one person is allowed to buy at a time. Second, consumers are often required to wait in long lines to get the scarce goods. By requiring that someone wait in line for hours in order to receive their ration of coffee, central planners are effectively raising the cost of coffee to consumers – some consumers will choose to give up their coffee rather than wait in line.

3.5. a. and c. are positive statements; b. and d. are normative statements.

1.4 Microeconomics and Macroeconomics (page 12)

Learning Objective: Distinguish between microeconomics and macroeconomics.

4.1 a. and d. are microeconomic questions; b. and c. are macroeconomic questions.

4.2 You should disagree with the assertion. Microeconomics deals with individual decision makers; because the unemployment rate in any one city would be an issue for the economy of the entire city and not an individual, it is a macroeconomic issue rather than a microeconomic issue. Macroeconomics deals with economy-wide outcomes, so the effect of an increase in the taxes on alcohol on underage drinking is as a microeconomic issue.
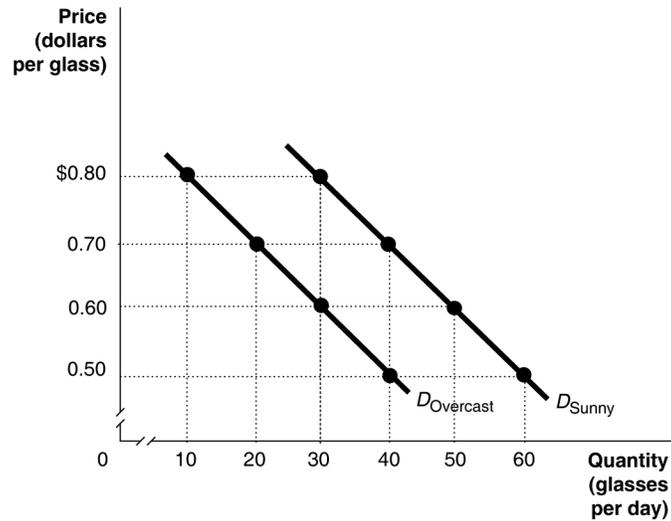
SOLUTIONS TO CHAPTER 1 APPENDIX

1A.1 a. The relationship is negative because as price decreases, the quantity of pies purchased increases.

b.
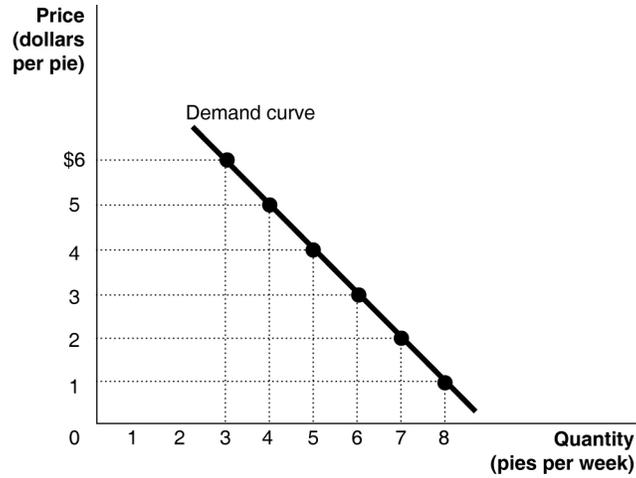
c. The slope $= \Delta y/\Delta x =$ rise/run $= -1/1 = -1$.

1A. 2

1A.3 Answers will vary somewhat depending on the values determined from the time-series graph. The calculations below use Ford sales rounded to the nearest thousands.

| Period	Percentage Change
2001 to 2002	$[(3.411 - 3.774)/3.774] \times 100 = -9.6\%$
2002 to 2003	$[(3.256 - 3.411)/3.411] \times 100 = -4.5\%$
2003 to 2004	$[(3.112 - 3.256)/3.256] \times 100 = -4.4\%$
2004 to 2005	$[(2.967 - 3.112)/3.112] \times 100 = -4.7\%$
2005 to 2006	$[(2.735 - 2.967)/2.967] \times 100 = -7.8\%$
2006 to 2007	$[(2.402 - 2.735)/2.735] \times 100 = -12.2\%$
2007 to 2008	$[(1.915 - 2.402)/2.402] \times 100 = -20.3\%$
2008 to 2009	$[(1.621 - 1.915)/1.915] \times 100 = -15.4\%$
2009 to 2010	$[(1.945 - 1.621)/1.621] \times 100 = 20.0\%$

Sales fell at the fastest rate between 2007 and 2008.

1A.4 $[(\$12,703 - \$13,162)/\$13,162] \times 100 = -3.5\%$

The percentage change in real GDP from one year to the next is the economy's growth rate.

1A.5

    a.
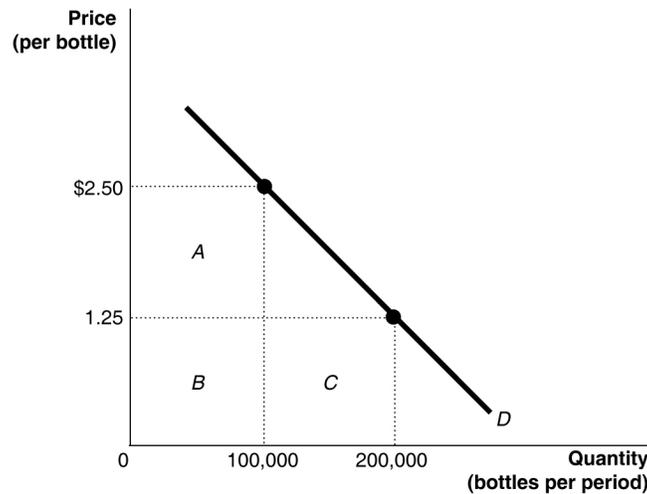
    b. At $2.50, the total revenue equals rectangles $A + B = \$250,000$ (because $\$2.50 \times 100,000 = \$250,000$). At $1.25, the total revenue equals rectangles $B + C = \$250,000$ (because $\$1.25 \times 200,000 = \$250,000$).

1A.6 The triangle's area $= 0.5 \times 60,000 \times \$0.75 = \$22,500$.

1A.7 The slope is calculated using the formula:

$$\text{Slope} = \frac{\text{Change in value on the vertical axis}}{\text{Change in value on the horizontal axis}} = \frac{\Delta y}{\Delta x} = \frac{\text{Rise}}{\text{Run}}.$$

At point A: rise $= 300 - 175 = 125$, run $= 7 - 5 = 2$. Therefore, the slope $= 125/2 = 62.5$.

At point B: rise $= 900 - 700 = 200$, run $= 14 - 12 = 2$. Therefore, the slope $= 200/2 = 100$.