Chapter 1

**The Principles and Practice of Economics**

# Questions

1. Give examples to explain how economic analysis can be positive and normative.

*Answer*: Positive economics is objective and based on facts. However, normative economics is subjective and opinion based. For example:

Positive: The mismatch between students’ knowledge and the market requirements is a factor that underlies low employability.

Normative: The government should increase the minimum wage earned by each employee.

1. Economists think of almost all human behavior as the outcome of choices. Do you agree with this statement? Based on your reading of the chapter, how would you define economics?

*Answer*: Individuals, firms, and nations face scarcity. Individuals have limited budgets (scarce resources) compared to the unlimited wants that they wish to satisfy. Firms have unlimited investment projects as compared to their limited budgets. Nations may have many areas—growth, human development, healthcare, legislature, and education—that require expenditure, but due to limited budgets the governments need to prioritize.

Scarcity of resources for individuals, firms, and nations compared to their unlimited wants pushes them to make choices by allocating scarce resources to desired wants. Economics is a science that helps in performing this allocation.

1. Examine the following statements and determine if they are normative or positive in nature. Explain your answer.
2. The Euro area of the European Union (EU) is projected to grow by 1.6 percent in 2017, according to a report released by the International Monetary Fund (IMF) in January 2017.
3. Miguel Arias Cañete, the European Commissioner for Climate Action and Energy, and Catherine McKenna, the Canadian Minister of Environment and Climate Change, met in Ottawa, Canada, on March 2, 2017, and reaffirmed their commitment to address climate change and to accelerate innovation for clean growth.

*Answer:*

1. This is an objective prediction released by the IMF about growth in the Euro area. Positive economics is the analysis that generates objective descriptions or predictions about the world, which can be verified with data. Since data can be used to underline why the IMF believes that growth will be 1.6 percent in the Euro area in 2017, this is a positive statement. However, students should note that different organizations may have different growth predictions about the Euro area and that the IMF itself will revise these calculations every quarter.
2. The statement about how Canada and the EU should counter climate change by focusing on innovation for clean growth is normative since it states what governments ought to do. Normative economics prescribes what an individual or society should do.
3. How does microeconomics differ from macroeconomics? Would the supply of iPhones in the United States be studied under microeconomics or macroeconomics? What about the growth rate of total economic output in the national economy?

*Answer*: Microeconomics is the study of how individuals, households, firms, and governments make choices, and how those choices affect prices, the allocation of resources, and the well-being of other agents. Macroeconomics is the study of the economy as a whole. Macroeconomists study factors that affect overall⎯in other words, aggregate⎯economic performance.

The supply of iPhones refers to the supply of a good by an individual firm, Apple. The iPhone market will be studied under microeconomics. Microeconomics studies how individuals, households, firms and governments make choices, and how those choices affect prices and the allocation of resources. The growth rate of total economic output, on the other hand, refers to the aggregate American economy, and is therefore studied under macroeconomics.

1. Why do economic agents have to make trade-offs on any given day of their lives? What kind of non-monetary budget constraints do agents face?

*Answer:* An economic agent faces the prospect of a trade-off when the agent needs to give up one thing to get something else. For instance, any agent (person) faces a trade-off when organizing their daily schedule. Should an agent go to work or stay at home and watch a TV series? Should an agent spend an extra hour at work or hang out with friends? Should an agent spend their free time focusing on getting an extra degree in legal studies or be happy with the current work position they are in?

An example of a non-monetary budget constraint is that of time. All economic agents have 24 hours in their day. Therefore, based on their utilities, agents optimize by making trade-offs on what kind of activity they take part in.

1. This chapter introduces the idea of opportunity cost.
2. What is meant by opportunity cost?
3. What is the opportunity cost of taking a year after graduating from high school and backpacking across Europe? Are people who do so being irrational?

*Answer:*

1. Opportunity cost is the best alternative use of a resource. The opportunity cost of a particular choice is measured in terms of the benefit foregone from the next best alternative. To facilitate comparison, the benefits and costs of various choices are translated into monetary units like dollars.
2. The opportunity cost of backpacking across Europe, for a particular person, is the cost of anything else that could have been done in that year. The backpacker could have attended college or started working. These costs are the opportunity costs of the gap year. This, however, does not mean that backpackers are irrational, because the benefits may exceed the cost. Every action has an opportunity cost. The choices that people make are optimal based on their perceived costs and benefits.
3. Suppose you wish to take a mortgage to buy a new house for your family. However, the houses you like exceed your budget. You are considering three options: choose a neighborhood that is less fashionable and, therefore, the prices are lower; take up a mortgage with a longer maturity period; or instead of buying a house, buy a larger apartment in your current neighborhood. How would you evaluate these options and choose the optimal one?

*Answer*: You can use cost-benefit analysis to compare the various feasible alternatives and pick the best one. Cost-benefit analysis is a calculation that adds up costs and benefits using a common unit of measurement, like euro values. Buying a house in a less fashionable neighborhood would give you a larger space and your family a garden to enjoy, but it might take longer to commute to work or the schools in the locality might be of a lower quality. The mortgage with a longer maturity period allows you to buy your dream house, but you will be opening yourself up to a greater risk of default should you, or your partner, lose your job. Buying a larger apartment instead of a house gives you enough rooms for an expanding family, but not a garden. All these options need to be converted into euro values. This will include monetary as well as opportunity costs. You can then choose the option that offers you the greatest net benefit.

1. Suppose the market price of the latest model of iPhone is €759 in Germany. What are the three conditions that will need to be satisfied for the iPhone market to be in equilibrium at this price?

*Answer*: For the market to be in equilibrium, three conditions will need to be satisfied.

* At the price of €759 per unit, the number of iPhones supplied by Apple should be equal to the number of iPhones purchased by buyers in the market.
* Apple has chosen the optimal quantity of iPhones to supply given the price of €759 per unit.
* Consumers have chosen the optimal quantity of iPhones to buy given the price of €759 per unit.

1. The problem of free-riding has interested economists for a considerable time. Suppose you are living in a housing project that has 100 apartments. The housing project has its own garden, swimming pool, library, and community center. To be able to utilize the available amenities, residents have to contribute €50 a month towards the upkeep while also taking turns keep it clean.
2. What is meant by free riding?
3. How would you define a free-riding resident? Why is this a problem for the housing project?

*Answer:*

1. A free rider is a person who receives the benefit of a good but avoids paying for it. People tend to pursue their own private interests and usually don’t contribute voluntarily to the public interest. For example, watching a pirated copy of a movie is cheaper than buying one. Those who watch the pirated version are free riders because there are others who buy the movie or pay for movie tickets. If everyone watched pirated copies, making movies would not be profitable and the industry would not function.
2. In the situation provided in the question, a free riding resident would be a person or family that does not contribute in terms of money and commitment of keeping the project clean. In a way, this person is using the services being offered by the housing project for free and is taking advantage of the other contributing residents. This is a problem for the housing project because it will compel the paying residents to either eventually pay more money for the upkeep of the garden, swimming pool, and other amenities, or they will have to work more in any given week to keep it clean.
3. “Scarcity exists because people have unlimited wants in a world of limited resources.” Explain this statement by giving a real-life example.

*Answer:* Since the world has limited resources, no one can have everything they want. For example, you have a given income that you would allocate to buy different things. You choose how much of this income you will allocate for each expense: to buy clothes, to buy a car, to travel and for vacations. Due to your limited budget you will face a scarcity problem.

1. Identify the cause and the effect in the following phenomena in a hypothetical country:
2. A surge in the price of goods and an increase in the workers’ income.
3. A rise in GDP and an increase in the number of university graduates.

*Answer:*

1. The increase in income is likely to induce people to spend more and cause the surge in prices.
2. The increase in the number of university graduates in the country is likely to have led to higher productivity and caused the rise in GDP.

# Problems

1. You have already purchased (non-refundable and unsellable) tickets to a concert on Friday night. A friend also invites you to her birthday party on Friday. While you like your friend, you politely decline because you really want to go to the concert.

1. You learn that your friend is serving flank steak at her party, all-you-can eat and at no charge. Flank steak is your favorite food. Should this affect your decision to go to the concert? Explain by using the term “opportunity cost.”
2. Suppose instead that you notice that the non-refundable concert ticket (that you already purchased) cost you $10; previously you had mistakenly believed the price was $100. Should learning this information affect your decision to go to the concert?

*Answer:*

1. This should affect your decision, or at least make you reconsider. The explicit cost of the concert has not changed, nor the benefit of the concert itself. However, the opportunity cost of missing the party is now higher than you previously thought.
2. This should *not* affect your decision. Whether you paid ($10 or $100) in the past is irrelevant to the costs and benefits that you can affect by going (or not going) to the concert.

2. You are thinking about buying a house in London. You find one you like that costs £1,000,000. You learn that, based on the value of the house and your wages, your bank will give you a mortgage for 20 years in the region of £600,000. This means that you have to make a down payment of £400,000. What are some of the monetary and non-monetary opportunity costs of this purchase?

*Answer:* By using your £400,000 to buy the house, you give up the opportunity to earn interest on that money. If you could earn 4 percent interest, then the opportunity cost is 0.04 × £400,000 = £16,000 GBP per year. Also, if the value of the house increases (real-increase) by 2 percent per annum, then the value of your property will have increased by £20,000 a year (1,000,000 × 1.02 = 1,020,000). Subtracting the opportunity cost of £16,000, this indicates a gain of £4,000. However, you will also have to pay mortgage. At a 4 percent mortgage, you will be paying £24,000 per annum. Under these conditions, individual buyers will have to decide whether it makes sense for them to buy the house. Some of the non-monetary opportunity costs include the benefits associated with a better neighborhood, such as accessibility to public transport, shops, and schools.

3. Your local coffee shop used to be the best in the neighborhood; however, due to a recent change in ownership the quality of the service and products offered has been steadily decreasing. Nevertheless, you have some fond memories of the place and it is also quite conveniently located—on the way to the train station that you use to get to work.

a. What is the opportunity cost of searching for a new coffee shop?

b. You have found a new coffee shop, but to get there you have to take a longer route to the train station. How would you determine, every morning, which coffee shop to visit? The old one or the new one?

*Answer:*

a. You have to invest time and effort in finding a new coffee shop. You will also have to leave your apartment (flat) earlier or take some extra time after work to find the optimal one. Instead, this time could be spent in relaxing or meeting with friends.

b. You will have to factor in whether the extra walk to get to the train station is worthwhile to visit your new coffee shop. If you were able to leave your flat on time, or there are trains every five minutes from your local station, than the opportunity cost of visiting your new coffee shop will be presumably low. However, if you are late, if it is raining, or if your old coffee shop holds some sentimental value for you, you might stick to the old one.

4. By taking the train, Alain can travel from Paris to Lille in one hour. The same trip takes 5 hours by bus. The train costs €80 and the bus €20. When Alain is not traveling, he can work and earn €25 per hour.

1. What is the opportunity cost of Alain for traveling by bus and by train?
2. What will be the answer if another person chooses not to travel and, instead, to work for €10 per hour?

*Answer:*

1. The opportunity cost of the bus = 20 + (5× 25/hour) = €145. The opportunity cost for the train is 80 + (1 × 20) = €100.

b. The opportunity cost of the bus = 20 + (5 × 10/hour) = €70. The opportunity cost for the train is 80 + (1 × 10) = €90.

5. Consider the following three statements:

1. You are planning a conference in St. Petersburg, Russia, and your closing gala will be on a cruise boat in November. Do you think hosting the event on a boat is a rational choice?
2. You have to reach the airport during rush hour to catch your flight to St. Petersburg. You have two options: take the underground or take a taxi. Although you have an hour to get there, traffic most of the time is heavy during rush hour. Which option would be the rational choice?
3. Suppose you decided to take a taxi to the airport and made it to the airport in time. Once you landed in St. Petersburg, you noticed that the temperature was surprisingly mild, making the cruise boat experience comfortable. Do these outcomes mean that the decisions to host an event on a cruise boat in November and take a taxi to the airport were rational?

*Answer:*

1. Considering the low average temperature in St. Petersburg in November, if the boat does not have heating or paneling or is not made for the Russian winter, hosting the event on a cruise boat is likely to be an irrational decision.
2. If the traffic is heavy during rush hour, the rational choice would be to take the underground to the airport. A taxi can easily get stuck in traffic, whereas the metro is less likely to get stuck.
3. It is possible to beat the odds despite making an irrational decision. The probable temperature in November in St. Petersburg and time taken to get to the airport by taxi are estimated as averages; there can always be some deviation from the mean.

6. Consider the following three statements:

1. Your friends are coming over for lunch and you realize you have forgotten to get groceries. You go to the local market, where there are about 50 stalls. You are in a hurry, so you decide to do all of your shopping at the first two stalls.
2. You find a stall that sells good quality vegetables and fruit. However, you do not have enough money on you. You start to haggle and agree on a 15 percent discount for the products you are buying.
3. Despite being in a hurry, you now decide to go around the market to check the prices and quality at all stalls.

Which of these statements deals with optimization, which deals with equilibrium, and which deals with empiricism? Explain.

*Answer:* The first statement involves optimization. You believe that you will be better off by making all your purchases quickly to get home in time to do the cooking. The second statement involves equilibrium. The shopkeeper may have been in a hurry to make the sale or the fruits and vegetables might have been nearing their expiry date. Therefore, you settled on a price that is acceptable to both parties. In other words, supply met demand on an agreed upon price. The third statement involves empiricism. You decided to obtain data on price and quality through observation in order to make an informed purchase.

7. In 2014, California was in its third year of a major drought. With water supplies dwindling, Governor Brown issued a plea for a voluntary 20 percent reduction in water use. This target was not reached. In early 2015 Governor Brown issued an executive order requiring local water agencies to reduce water use by 25 percent, but no enforcement mechanism was specified. No taxes or fines were in the executive order. State officials hoped that they could achieve compliance without resorting to fines.

1. From an individual homeowner’s perspective, what are the costs and benefits of using water during a drought? Why do you think that the voluntary reduction order in 2014 didn’t work?
2. Using concepts from this chapter, explain how you might get individual homeowners to reduce water use during a drought.
3. Eventually, many communities began levying fines on water use. However, while many middle income families dramatically cut water use, wealthy households cut back their water use relatively little. How can you explain this phenomenon from an economic perspective?

*Answers:*

1. With no specific enforcement mechanism, there is low cost to using water. Water bills are not zero, but these prices were low enough in the past to create a water shortage, so clearly the financial cost is not high enough to prevent a shortage. There may be some social stigma attached to watering a lawn, though this cost varies for each person and depends on their sense of civic responsibility. On the flip side, the benefits of using water are quite clear: Green lawns, pleasant showers, and odorless toilets. The fact that the 2014 plea did not work is because the cost of violating a call for civic responsibility is not very high for most people.
2. Charging a higher price for water than in 2014 would likely result in a reduction in water usage. When the price goes up, people would discover that some of their usage is actually not that important.
3. Fines are equivalent to a higher price for water. In this case, lower income individuals were more price elastic; they responded more sharply to a price change. This implies that the willingness to pay for the last gallon of water in a low-income household is less than the willingness to pay in a high-income household.

8. Use the concepts discussed in this chapter to answer the following problems:

*Answer:*

a. The free rider problem explains why some workers decide not to join trade unions. On the one hand, they hope that they will not need the services provided by the trade union, such as legal assistance. On the other hand, they know that even if such a need arises, the services will be available to everyone, irrespective of whether they have paid a membership fee or not.

b. The other family can insist on signing a joint usage-of-the-garden contract that states the responsibilities shared by the two families. It can also state the consequences of failing to share those responsibilities. Alternatively, they can decide to maintain only the half that is closer to them.

9. It is the night before your economics final exam and you must decide how many hours to study. The total benefits column shows how many more points you expect to earn because of increased knowledge. The cost column shows how many points you will lose because of careless errors due to lack of sleep. (The “marginal” columns show the effect of each additional hour spent studying. These marginal numbers are calculated by taking the difference within a column from one row to the next row.)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Hours Spent Studying | Total Benefit | Marginal Benefit | Total Cost | Marginal Cost |
| 0 | 0 | -- | 0 | -- |
| 1 | 10 | 10 | 0 | 0 |
| 2 | 16 | 6 | 3 | 3 |
| 3 | 20 | 4 | 8 | 5 |
| 4 | 20 | 0 | 15 | 7 |

1. If you study in an optimal way, how many more points will you earn on the test?
2. Explain how you can find the optimal number of hours by using the marginal benefits and marginal costs columns.

*Answer:*

1. Total benefit minus total cost is maximized at 16 - 3 = 13 when you study for two hours. This difference is lower in all other rows.
2. You can arrive at the answer of 2 hours by noticing that the first hour is well worth it since the marginal benefit of 10 is greater than the marginal cost of 0. The second hour is also worth it since 6 > 3. However, the third hour is not worth it since 4 < 5, thus you will gain fewer points than you will lose. (This sort of “marginal analysis” is a recurrent theme in economics.)