International Trade

Thus far, we have said nothing about where Emily and Johann live or work. They could reside in the same country, but they also could reside in different countries. Emily could live in the United States; Johann, in Germany. If this is so, when Emily purchases Johann’s printing service, **international trade** will take place because the trade is between people in two different countries.

The gains from international trade are thus of the same kind as the gains from trade within a country. By trading, people can better satisfy their preferences for goods (as in the case of Maria and Adam), or they can better utilize their comparative advantage (as in the case of Emily and Johann). In either situation, both participants can gain from trade.

Scarcity and Choice for the Economy as a Whole

Just as individuals face scarcity and choice, so too does the economy as a whole. The total amount of resources in an economy—workers, land, machinery, and factories—is limited. Thus, the economy cannot produce all the health care, crime prevention, education, or entertainment that people want. A choice must be made. Let us first consider how to represent scarcity and choice in the whole economy and then consider alternative ways to make those choices.

Production Possibilities

To simplify things, let us suppose that production in the economy can be divided into two broad categories. Suppose the economy can produce either computers (laptops, desktops, servers) or movies (thrillers, love stories, mysteries, musicals). The choice between computers and movies is symbolic of one of the most fundamental choices individuals in any society must face: how much to invest to produce more or better goods in the future versus how much to consume in the present. Computers help people produce more or better goods. Movies are a form of consumption. Other pairs of goods also could be used in our example. Another popular example is guns versus butter, representing defense goods versus nondefense goods.

With a scarcity of resources, such as labor and capital, a choice exists between producing some goods, such as computers, versus other goods, such as movies. If the economy produces more of one, then it must produce less of the other. Table 1-1 gives an example of the alternative choices, or the **production possibilities**, for computers and
movies. Observe that six different choices could be made, some with more computers and fewer movies, others with fewer computers and more movies.

Table 1-1 tells us what happens as available resources in the economy are moved from movie production to computer production or vice versa. If resources move from producing movies to producing computers, then fewer movies are produced. For example, if all of the resources are used to produce computers, then 25,000 computers and zero movies can be produced, according to the table. If all resources are used to produce movies, then no computers can be produced. These are two extremes, of course. If 100 movies are produced, then we can produce 24,000 computers rather than 25,000 computers. If 200 movies are produced, then computer production must fall to 22,000.

**Increasing Opportunity Costs**

The production possibilities in Table 1-1 illustrate the concept of opportunity cost for the economy as a whole. The opportunity cost of producing more movies is the value of the forgone computers. For example, the opportunity cost of producing 200 movies rather than 100 movies is 2,000 computers.

An important economic idea about opportunity costs is demonstrated in Table 1-1. Observe that movie production increases as we move down the table. As we move from row to row, movie production increases by the same number: 100 movies. The decline in computer production between the first and second rows—from 25,000 to 24,000 computers—is 1,000 computers. The decline between the second and third rows—from 24,000 to 22,000 computers—is 2,000 computers. Thus, the decline in computer production gets greater as we produce more movies. As we move from 400 movies to 500 movies, we lose 13,000 computers. In other words, the opportunity cost, in terms of computers, of producing more movies increases as we produce more movies. Each extra movie requires a loss of more and more computers. What we have just described is called *increasing opportunity costs*, with an emphasis on the word *increasing*.

Why do opportunity costs increase? You can think about it in the following way. Some of the available resources are better suited for movie production than for computer production, and vice versa. Workers who are good at building computers might not be so good at acting, for example, or moviemaking may require an area with a dry, sunny climate. As more and more resources go into making movies, we are forced to take resources that are much better at computer making and use them for moviemaking. Thus, more and more computer production must be lost to increase movie production by a given amount. Adding specialized computer designers to a movie cast would be quite costly in terms of lost computers, and it might add little to movie production.

### Table 1-1

<table>
<thead>
<tr>
<th>Production Possibilities</th>
<th>Movies</th>
<th>Computers</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>0</td>
<td>25,000</td>
</tr>
<tr>
<td>B</td>
<td>100</td>
<td>24,000</td>
</tr>
<tr>
<td>C</td>
<td>200</td>
<td>22,000</td>
</tr>
<tr>
<td>D</td>
<td>300</td>
<td>18,000</td>
</tr>
<tr>
<td>E</td>
<td>400</td>
<td>13,000</td>
</tr>
<tr>
<td>F</td>
<td>500</td>
<td>0</td>
</tr>
</tbody>
</table>

*increasing opportunity cost* a situation in which producing more of one good requires giving up an increasing amount of production of another good.
The Production Possibilities Curve

Figure 1-2 is a graphical representation of the production possibilities in Table 1-1 that nicely illustrates increasing opportunity costs. We put movies on the horizontal axis and computers on the vertical axis of the figure. Each pair of numbers in a row of the table becomes a point on the graph. For example, point A on the graph is from row A of the table. Point B is from row B, and so on.

When we connect the points in Figure 1-2, we obtain the production possibilities curve. This curve shows the maximum number of computers that can be produced for each quantity of movies produced. Note that the curve in Figure 1-2 slopes downward and is bowed out from the origin. That the curve is bowed out indicates that the opportunity cost of producing movies increases as more movies are produced. As resources move from computer making to moviemaking, each additional movie means a greater loss of computer production.

Community College Enrollments and the Economic Downturn

The fall term of the 2008–2009 academic year saw record enrollment increases at community colleges throughout the United States. Enrollment at Delaware Community College in Media, Pennsylvania, was up 8.5 percent compared with typical increases of 3 percent. Enrollment was up an estimated 16 percent at Palm Beach Community College, in Lake Worth, Florida. According to an August 2008 report from Inside Higher Education, “Though most colleges only have estimates for their enrollments this fall, many colleges are projecting increases of around 10 percent over last fall.”

What explains this enrollment boom? Changing opportunity costs is the most likely explanation. Grace Truman, the spokesperson for Palm Beach Community College, put it this way, “Our enrollment growth strongly correlates to downturns in the economy. Locally, we have had significant slumps and layoffs, particularly in the housing and construction related industries. Our housing, food and gasoline costs have risen sharply in the same time period.”

In other words, the downturn in the economy reduced the opportunity cost of going to community college because it made jobs harder to find and less attractive. The unemployment rate in Florida jumped from 4.5 percent to 8.1 percent during the 12 months ending in December 2008. In Pennsylvania, it rose from 4.4 to 6.7 percent and in the nation as a whole from 4.9 to 7.2 percent. The unemployment rate for teenagers (ages 16 to 19) is always higher than the average and it equaled 21 percent at the end of 2008. In these circumstances, finding a job may take a long time and, when you do find one, it may not pay as much as in good economic times.

Question to Ponder

1. Enrollment at community colleges also grew more rapidly than at four-year colleges. Can you use opportunity costs to explain that growth?
Inefficient, Efficient, or Impossible? The production possibilities curve shows the effects of scarcity and choice in the economy as a whole. Three situations can be distinguished in Figure 1-2, depending on whether production is in the shaded area, on the curve, or outside the curve.

First, imagine production at point \( I \). This point, with 100 movies and 18,000 computers, is inside the curve. But the production possibilities curve tells us that it is possible to produce more computers, more movies, or both with the same amount of resources. For some reason, the economy is not working well at point \( I \). For example, a talented movie director may be working on a computer assembly line because her short film has not yet been seen by studio executives, or perhaps a financial crisis has prevented computer companies from getting loans and thus disrupted all production of computer chips. Points inside the curve, like point \( I \), are inefficient because the economy could produce a larger number of movies, as at point \( D \), or a larger number of computers, as at point \( B \). Points inside the production possibilities curve are possible, but they are inefficient.

Second, consider points on the production possibilities curve. These points are efficient. They represent the maximum amount that can be produced with available resources. The only way to raise production of one good is to lower production of the other good. Thus, points on the curve show a trade-off between one good and another.

Third, consider points to the right and above the production possibilities curve, like point \( J \) in Figure 1-2. These points are impossible. The economy does not have the resources to produce those quantities.

Shifts in the Production Possibilities Curve The production possibilities curve is not immovable. It can shift out or in. For example, the curve is shown to shift out
in Figure 1-3. More resources—more workers, for example, or more cameras, lights, and studios—would shift the production possibilities curve out. A technological innovation that allowed one to edit movies faster also would shift the curve outward. When the production possibilities curve shifts out, the economy grows because more goods and services can be produced. The production possibilities curve need not shift outward by the same amount in all directions. The curve could move up more than it moves to the right, for example.

As the production possibilities curve shifts out, impossibilities are converted into possibilities. Some of what was impossible for the U.S. economy in 1975 is possible now. Some of what is impossible now will be possible in 2035. Hence, the economists’ notion of possibilities is a temporary one. When we say that a certain combination of computers and movies is impossible, we do not mean “forever impossible,” we mean only “currently impossible.”

**Scarcity, Choice, and Economic Progress** However, the conversion of impossibilities into possibilities is also an economic problem of choice and scarcity: If we invest less now—in machines, in education, in children, in technology—and consume more now, then we will have less available in the future. If we take computers and movies as symbolic of investment and consumption, then choosing more investment will result in a larger outward shift of the production possibilities curve, as illustrated in Figure 1-4. More investment enables the economy to produce more in the future.

The production possibilities curve represents a trade-off, but it does not mean that some people win only if others lose. First, it is not necessary for someone to lose in order for the production possibilities curve to shift out. When the curve shifts out, the production of both items increases. Although some people may fare better than others as the production possibilities curve is pushed out, no one necessarily loses. In principle, everyone can gain. Second, if the economy is at an inefficient point (like point I in Figure 1-2), then production of both goods can be increased with no trade-off. In general, therefore, the economy is more like a win-win situation, where everyone can achieve a gain.
The production possibilities curve represents the choices open to a whole economy when it is confronted with a scarcity of resources. As more of one item is produced, less of another item must be produced. The opportunity cost of producing more of one item is the reduced production of another item.

The production possibilities curve is bowed out because of increasing opportunity costs.

Points inside the curve are inefficient. Points on the curve are efficient. Points outside the curve are impossible.

The production possibilities curve shifts out as resources increase.

Outward shifts of the production possibilities curve or moves from inefficient to efficient points are the reasons why the economy is not a zero-sum game, despite the existence of scarcity and choice.