

Introductory Macroeconomics

Pre-Tutorial #9
Week Starting 10th May 2021

The Tutorial. This week's tutorial looks at international trade.

Note that your tutor is under no obligation to go through the answers to the pre-tutorial work in detail. The focus in the tutorial will be on the tutorial work itself – the questions here are preparatory.

Reading Guide. You should look carefully over lectures 17 and 18. You may also find Chapter 16 of BOFAH useful.

Key Concepts. Production possibilities curve. Absolute/Comparative advantage. Specialisation.

Problems.

1. What is a production possibilities curve? What is meant by the term comparative advantage? How does it differ from the term absolute advantage? Is it possible for someone not to have a comparative advantage?
2. The following table shows the number of minutes it takes to produce one unit of each good. There are two workers in the economy.

	Shirt	Hat
Julia	60	120
Tim	30	90

- (a) Julia and Tim each work 8 hours per day. Draw this production possibilities curve for Julia, for Tim, and for the economy as a whole.
 - (b) What is the pattern of comparative advantage? Who has the absolute advantage in producing shirts? Who has the absolute advantage in producing hats?
 - (c) Suppose that Julia and Tim like to consume shirts and hats in equal proportions. That is, these goods are perfect complements. Illustrate using the individual production possibilities curve, where they would like to consume if there was no trade.
 - (d) At what prices would Julia and Tim both be happy to trade with each other? What would happen if the price of hats in the market exceeded 3 shirts? What would Julia produce? And Tim?
3. Consider a commodity, which is exported from county B to country A.
 - (a) Draw the demand and supply curve for this good, in country A and in country B. What does the export of this good from B to A imply about the equilibrium price of this good in autarky in each country?
 - (b) In a trade equilibrium, the price in each country must be the same and the world demand for the good must equal the world supply for the good. Use the demand and supply analysis to show that it is necessary for the world price to lie between the two countries' autarky prices for a trade equilibrium to exist.

Solutions to Pre-Tutorial Work.

1. A production possibilities curve is a graph that shows the maximum output that can be produced, given the level of output of the other good. The opportunity cost of producing a good is an alternative good (or set of goods) that is unable to be produced. Workers differ in the opportunity cost of producing goods. A worker has a comparative advantage in producing a good if his/her opportunity cost is below that of other workers in the economy. A worker has an absolute advantage in producing a good if they are able to produce the good more quickly. In practice, workers must have a comparative advantage in producing a good since no individuals have exactly the same skills. Theoretically, in 2-worker and 2-product economy, the opportunity cost of production for two individuals can be exactly equal.

2. (a) If Julia produces a hat, it takes two hours and in that time she could produce two shirts. In 8 hours, she could produce 4 hats or 8 shirts. A production possibilities frontier for Julia is given in the left panel of Figure 1.

If Tim produces a hat it takes 90 minutes and in that time he could produce three shirts. In 8 hours, Tim could produce 16 shirts or 5.33 hats. A production possibilities frontier for Tim is shown in the right panel of Figure 1.

When zero hats are produced Julia and Tim are able to produce 24 shirts. When zero shirts are produced then Julia and Tim are able to produce 9.33 hats. Let's start from a point where we produce zero hats. If we want to produce hats, then Julia has a comparative advantage - it only costs two shirts to produce a hat. This determines the slope of the production possibilities curve when hats are initially produced. If Julia only produces hats she produces 4 hats and if Tim only produces shirts, he can produce 16 shirts. This is a point on our production possibilities curve with Julia completely specialised in hats and Tim completely specialised in shirts. After this, we move Tim out of shirt production and into hat production. For each additional hat produced, we lose three shirts. A diagram is shown in Figure 2.

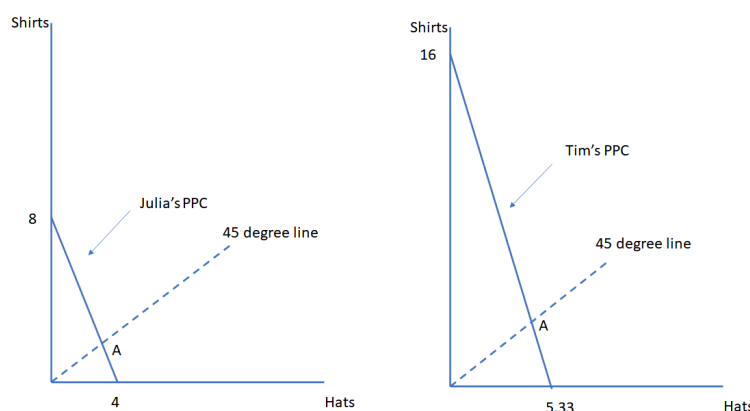


Figure 1: Julia and Tim's production possibilities curve

- (b) The above implies that Julia has the comparative advantage (lowest opportunity cost) in producing hats and Tim has the comparative advantage in producing shirts. Tim takes less time to produce both goods - hence he has the absolute advantage in both goods.

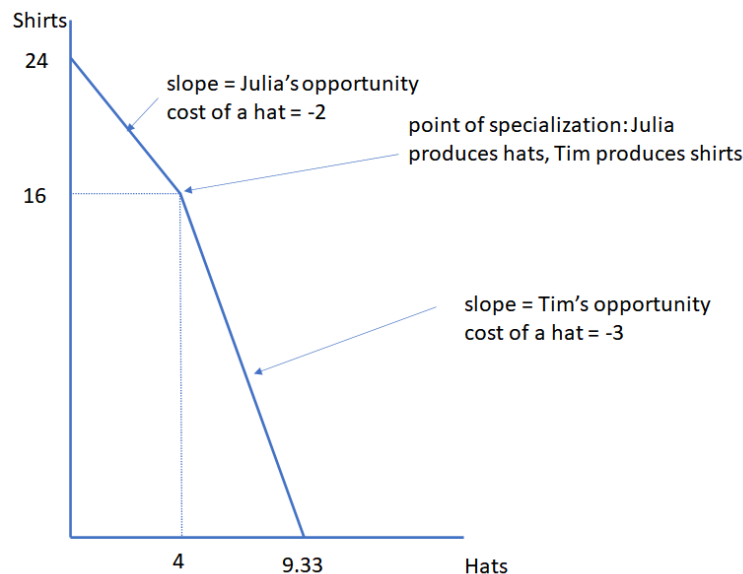


Figure 2: Economy's production possibilities curve

- (c) See Figure 1. The relevant points that they would consume in the absence of trade are given by point *A* in each diagram.
- (d) Julia's opportunity cost of producing one hat is two shirts. Tim's opportunity cost of producing one hat is three shirts. If the price of a hat is between 2 and 3 shirts, then Julia would be willing to produce hats and trade with Tim, who would be willing to produce shirts. As seen in the lecture, the price of hats must be between Julia and Tim's opportunity cost of producing a hat if Julia and Time are to specialise in different goods and then trade with each other.

We can see this makes both individuals better off. Let's assume that the price of a hat is 2.5 shirts. Julia, by producing one hat, can then trade with Tim to gain 2.5 shirts. This is more efficient than if she produced 2.5 shirts, which cost more than one hat. Tim is better off as well. If he produces a shirt, he can trade it with Julia for $1/2.5$ hats. If he was to produce $1/2.5$ hats, it would have cost more than one shirt. As a result, both gain from trade with each other via specialisation.

Let's suppose that the price of a hat is more than three shirts, 4 shirts, for example. In this case, Julia and Tim produce only hats. This is because, by producing one hat, they can attain 4 shirts in the market. This is more efficient than producing 4 shirts, which cost them more than one hat. Because they only produce hats, they do not trade with each other. The same is true if the price of hats is very low. In this case, they only produce shirts and do not trade with each other.

3. (a) Figure 3 shows the autarky equilibrium in each country. Without trade, supply equals demand in each country, and the price that ensures that happens is the autarky price. The fact that goods are exported from country B to country A implies that the autarky price in country B, p^B , must be lower than the world price, p^W , and the autarky price in country A, p^A , must be higher than the world price.
- (b) As shown in Figure 3, in country A, the world price is below the autarky price, and so A

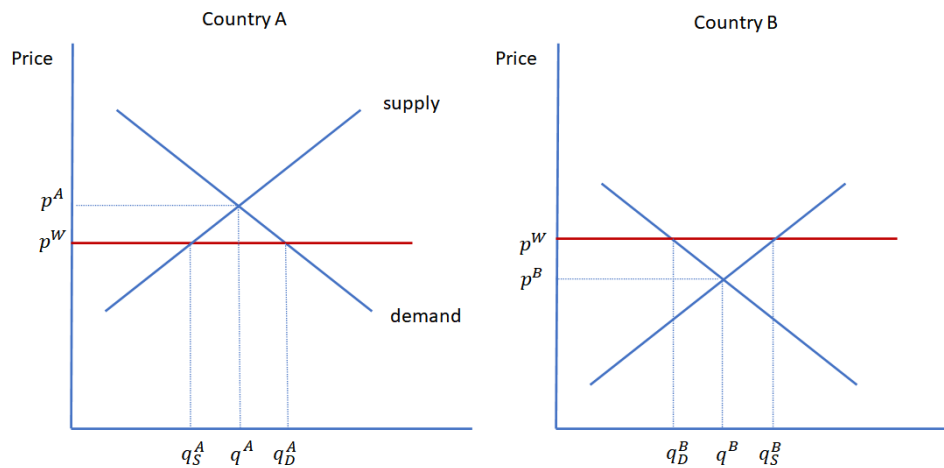


Figure 3: World price is between autarky prices. This implies one country has an excess supply and the other country has an excess demand for the good. In this case, an appropriate world price can equate the world supply and world demand.

is an importer of this commodity; the volume of imports is $q_D^A - q_S^A$, the excess demand at price p^W . In country B , the world price is above the autarky price and country B is an exporter. The volume of exports is $q_S^B - q_D^B$, the excess supply at price p^W . In this case, an appropriate world price can equate excess demand and excess supply. Therefore, at that price, the world supply equals world demand, and so a trade equilibrium exists.

Figure 4 shows a situation where a trade equilibrium does not exist; the world price being below both countries' respective autarky prices. Here, both countries would wish to import the commodity, and hence world demand is greater than world supply. A similar argument explains why the price can not be above all autarky prices; all countries would prefer to export the good in this case, and hence world supply is greater than world demand.

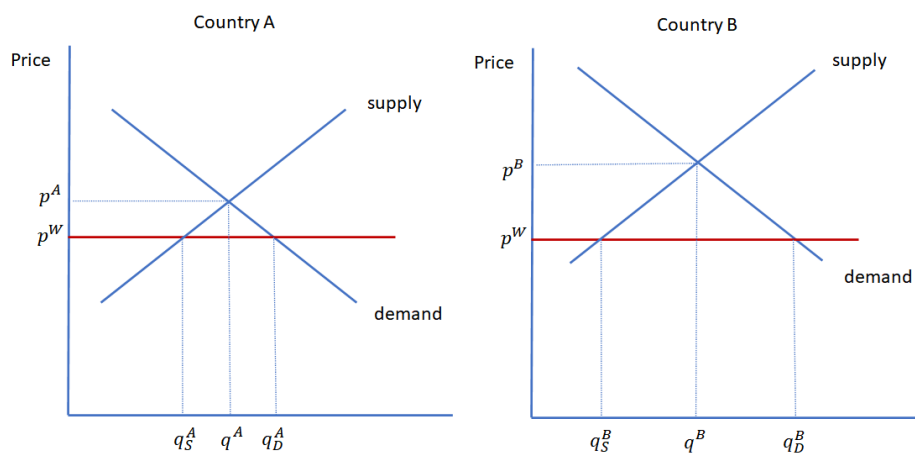


Figure 4: World price is below both autarky prices. This implies both countries have excess demand for the good. In this case, a trade equilibrium does not exist.