

International Trade Theory

Graph Handout – Ricardian Trade Model

This handout provides copies of many of the models that we'll be using in the course. Some of the simpler graphs are omitted here. I recommend you print at least one copy of these figures. Then when we develop the models in the lecture, you can spend more time understanding and less time drawing. Each figure has a brief description.

Good beer comes from Belgium, and good pizza comes from Italy. But since “Belgium” and “beer” both start with “B,” we'll use Holland (H) as the country that tends to specialize in beer. By the way, Amsterdam has many pubs which sell a huge variety of excellent Belgian beers.

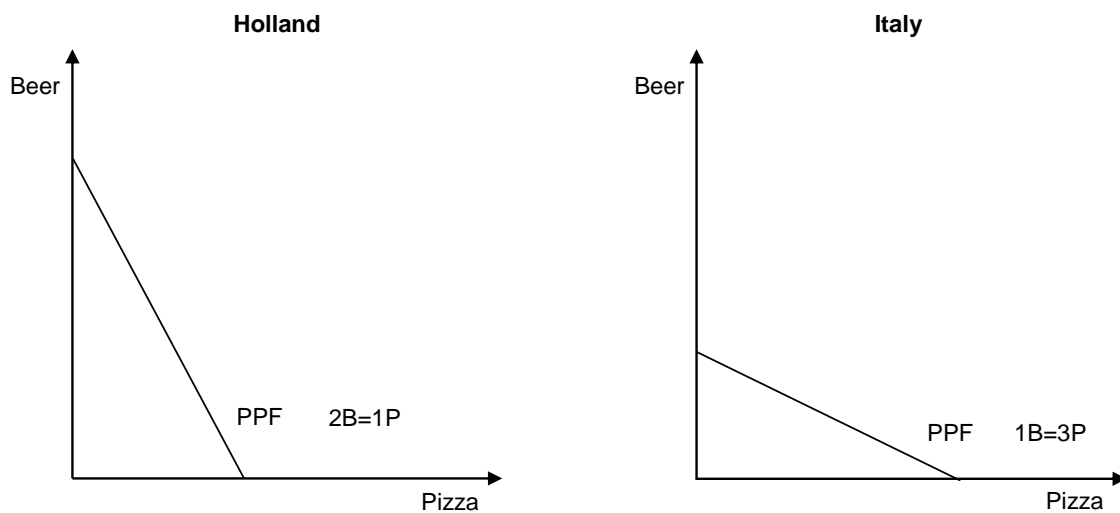


Figure 1.

Ricardian 2-country, 2-good, 1-input model of trade, with constant production costs.

Figure 1 illustrates the simplest trade model, with constant opportunity costs (linear PPFs). Next we use *increasing costs of production*. This change causes the PPF to become curved, concave to the origin, as illustrated in **Figure 2**, below.

In **Figure 2** the countries have identical PPFs, so we have drawn them on the same graph, on top of each other. The autarky production points are indicated, along with opportunity costs of production in autarky (found by the slope of the PPF at the autarky point). Notice that the dashed tangency lines in **Figure 2** are analogous to the PPFs from **Figure 1**. That is, they give the relatively opportunity costs of production in each country because they represent the slopes of the countries' autarky production points.

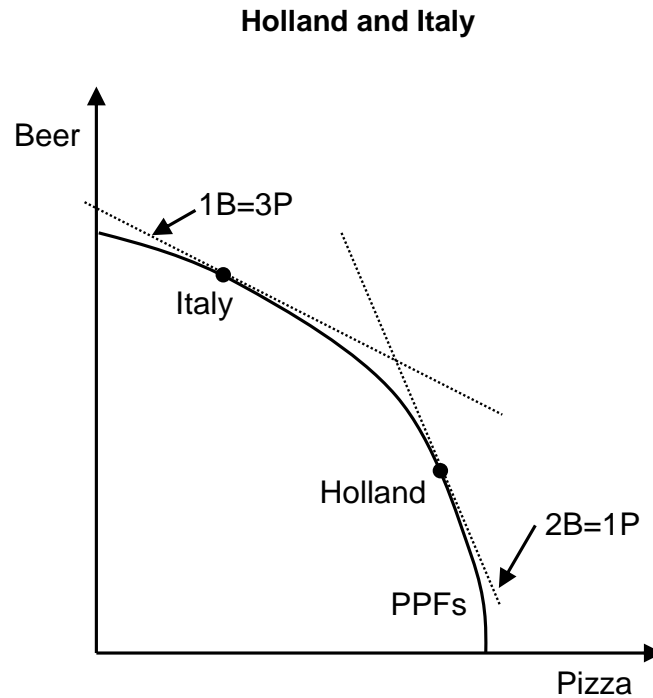


Figure 2.
Ricardian model with increasing production costs.

Next, since Italy has the comparative advantage in the production of pizza (why?), and Holland has the comparative advantage in beer, they specialize in those respective goods. This is shown in **Figure 3**. Eventually, their specialization causes their production points to “meet” at some point like $H, I_{\text{specialization}}$. At this point, their opportunity costs of production are identical, and there are no gains from further specialization. Note that this specialization process takes some time, and the countries may adjust their production at different speeds.

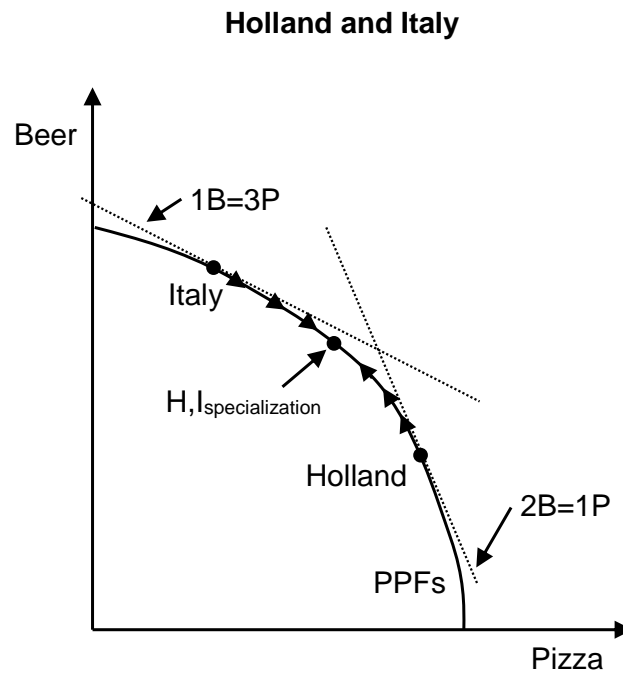


Figure 3.
Specialization in the countries' comparative advantages.

In **Figure 4** we illustrate the actual trade of pizza and beer. Each country will export the product in which it specializes its production. So Italy will export pizza and import beer; Holland will export beer and import pizza. In **Figure 4**, suppose they agree to trade at a ratio of 1 beer per pizza ($1B=1P$), so that the tt has a slope of -1. Next suppose they agree to trade 7 units at that price, so they trade 7 pizzas for 7 beers.

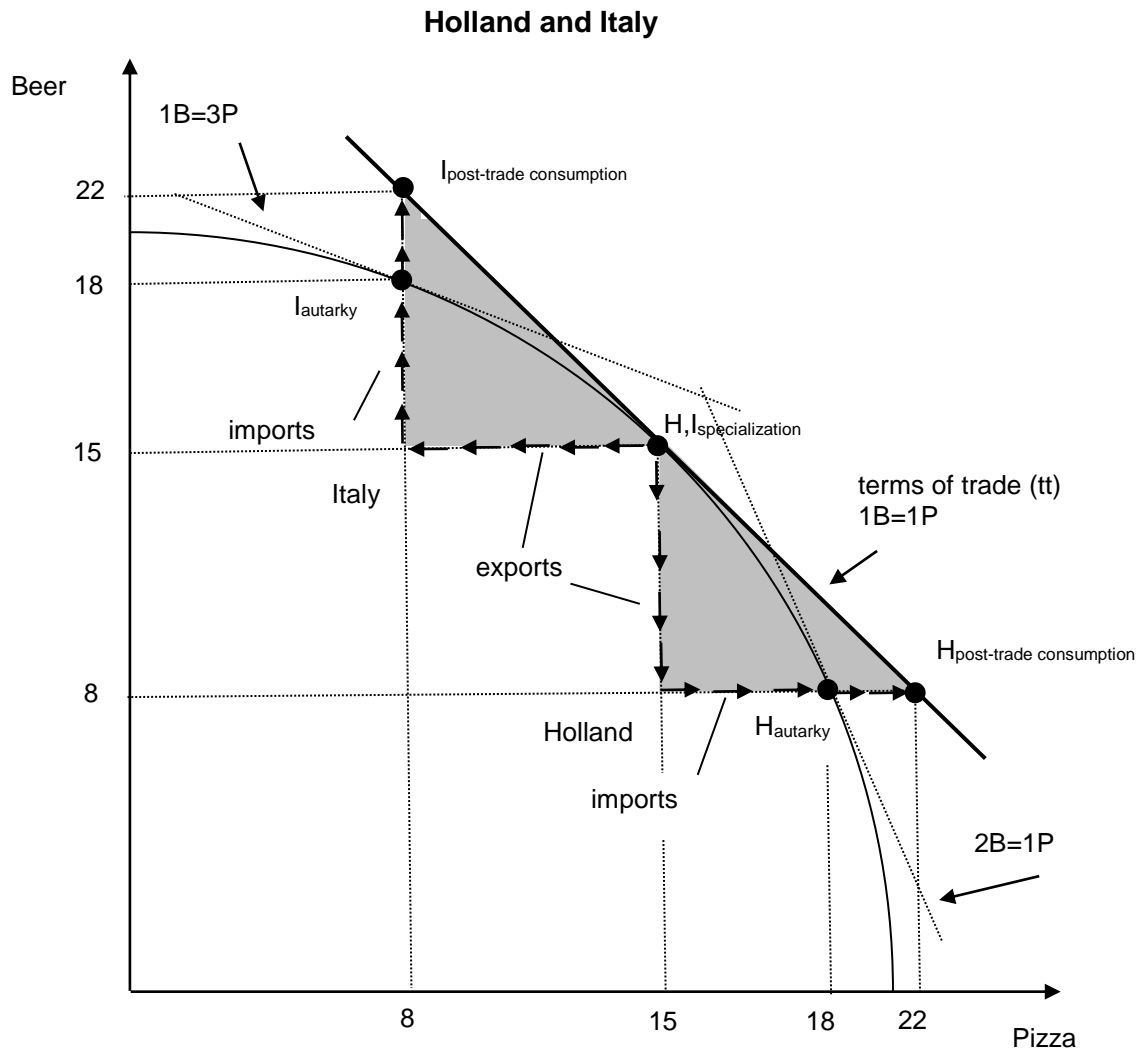


Figure 4.
Trading pizza and beer.

Suppose in **Figure 4** the PPFs and autarky points were the same for Italy and Holland. What would happen? If the two countries have identical PPFs and autarky points then their opportunity costs of production would be identical. There would be no potential benefits from specialization and trade.

In the next case, let's drop the assumptions that the countries have identical PPFs and autarky points. The model will begin getting more complicated, but it is much more realistic. In **Figure 5**, we can see the initial situation where the countries have different opportunity costs of production. Therefore, there is the potential for benefits from specialization and trade.

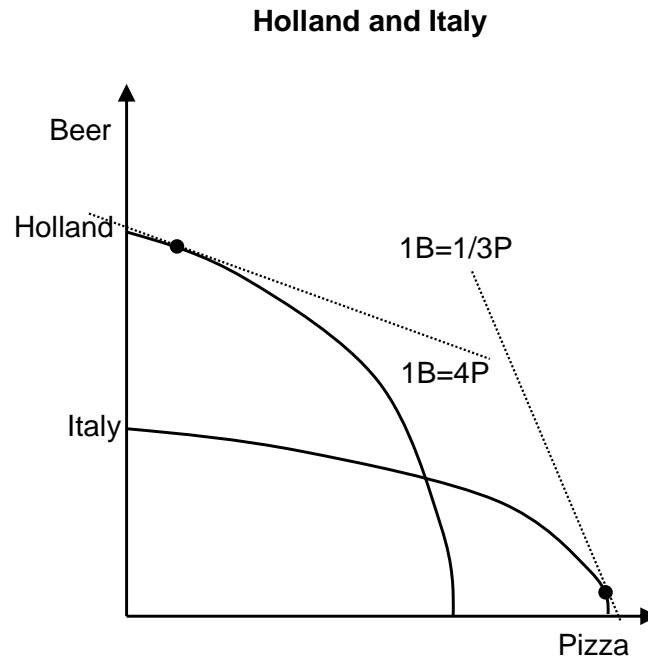


Figure 5.
Different PPFs and autarky points.

In **Figure 5**, notice we have changed the autarky points' slopes. Now which country has the comparative advantage in what? The answer depends *solely on the slopes of the PPFs in autarky* – not on the quantities produced by each country, or on the more general shapes of the PPFs. Here, Italy has the comparative advantage in beer, while Holland has it in pizza.

In **Figure 6** we show the countries' specialization. They quit adjusting their production mix once their opportunity costs become equal. The tt (terms of trade) line indicates the points at which the countries' relative opportunity costs are identical. I chose $1B=1P$ just because that's easy to work with; it certainly doesn't have to be at that ratio. Notice in **Figure 6** that the slope of the tt is between the slopes of the two countries' autarky points.

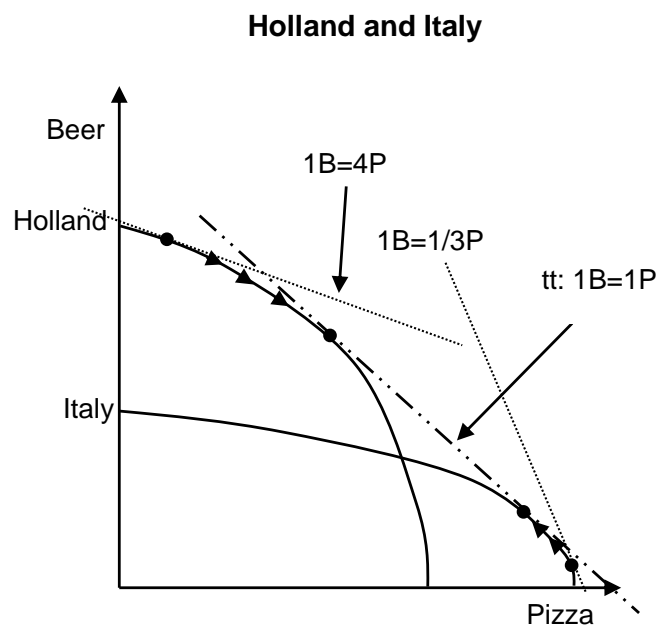


Figure 6.
Specialization.

In **Figure 7** we illustrate the trade from the case above. The trade triangles for the two countries must be identical, since one country's imports are the other's exports. The post-trade consumption points must be on the tt line, as shown in the figure.

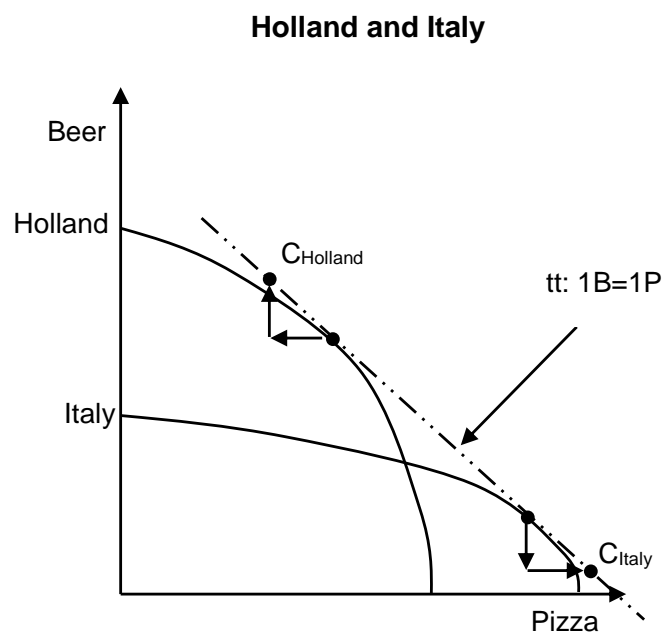


Figure 7.
Trade.

Until now we have considered only the supply (cost) side of the market. Next we incorporate preferences (demand) into the model. Again this makes the model more realistic but also complicates it. In **Figure 8** we show a simple case with different PPFs but *identical* ICs. (Lines indicated by numbers, points by letters.)

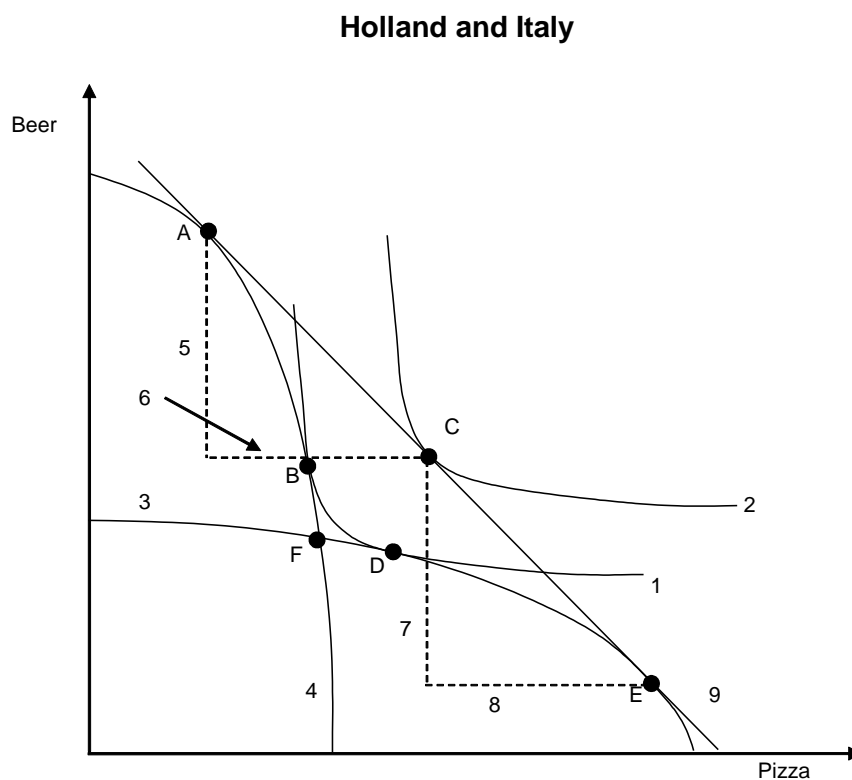


Figure 8.
Trade with identical preferences and different production costs.

Finally, see if you can figure out everything in **Figure 9**, below. Again, points are indicated by letters, and curves/lines are indicated by numbers. In this case the countries have different costs of production and different preferences.

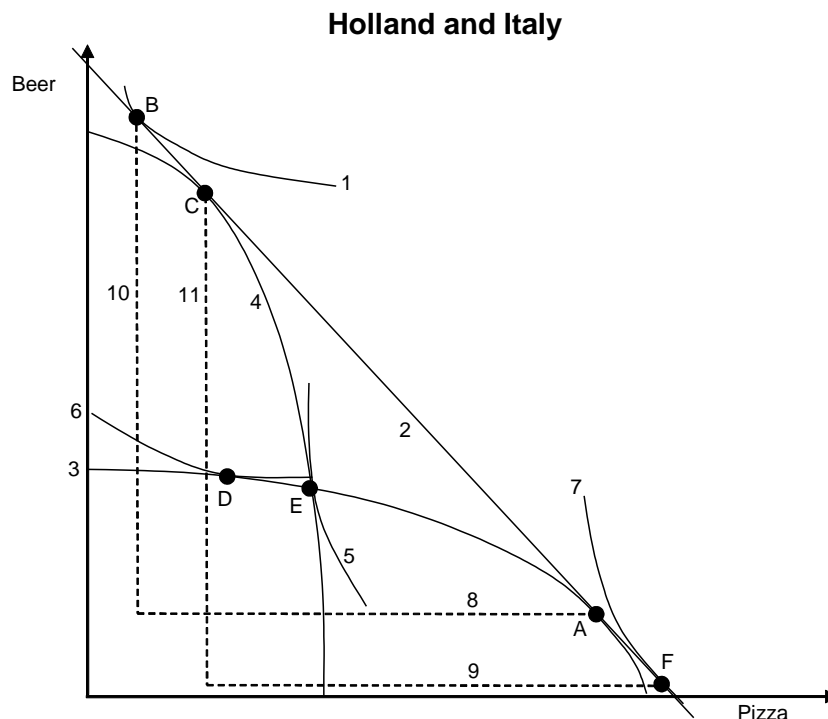


Figure 9.
Full Ricardian trade model with different preferences and costs of production.

In this case I would need to give you some information about one of the country's relative preferences or costs of production. From that one piece of information, you should be able to tell what each labeled object is in **Figure 9**.

Consider the following cases independently:

- (i) Suppose Italy has a relatively strong preference for pizza.
- (ii) Suppose Holland *tends to* have the lower opportunity cost in pizza production.

The Heckscher-Ohlin model is simply an extension to the above model. It considers factor endowments in determining who has the comparative advantage in what. Again, you must be given some information to figure what is going on. Consider the following cases independently:

- (iii) Suppose pizza is capital-intensive and Holland is labor abundant.
- (iv) Suppose beer is capital-intensive and Italy has a relatively strong preference for pizza.

For each of these cases, you should again be able to determine what each object is in **Figure 9**.