

1.4 — The Ricardian View of Trade: Formal One-Factor Model — Practice Problems (Solutions)

ECON 324 — International Trade

Tuesday August 25, 2020

Suppose the following facts to set up:

- Home has 100 Laborers
 - Requires 5 workers to make 1 wheat
 - Requires 10 workers to make 1 car
- Foreign has 200 Laborers
 - Requires 2 workers to make 1 wheat
 - Requires 8 workers to make 1 car

Plot wheat (w) on the horizontal axis and cars (c) on the vertical axis.

1. Write the equation of each country's production possibilities frontier (PPF).

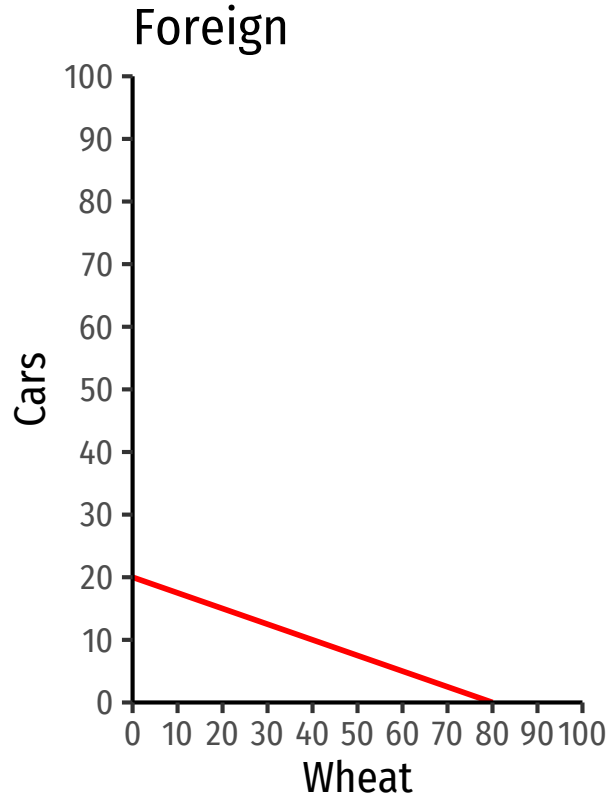
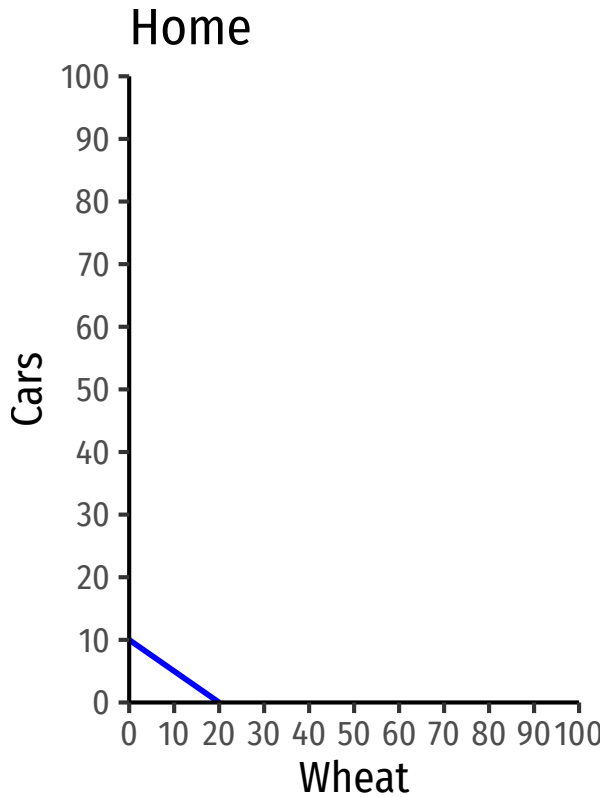
Home:

$$\begin{aligned}l_w w + l_c c &= \bar{L} \\5w + 10c &= 100 \\10c &= 100 - 5w \\c &= 10 - 0.5w\end{aligned}$$

Foreign:

$$\begin{aligned}l'_w w + l'_c c &= \bar{L}' \\2w + 8c &= 200 \\8c &= 200 - 2w \\c &= 20 - 0.25w\end{aligned}$$

2. Graph each country's PPF.



3. Which country has an *absolute* advantage in producing each good? Why?

Foreign has an absolute advantage in producing wheat, since it requires only 2 workers to produce 1 wheat, compared to Home's 5 workers. Also see that Foreign can produce more wheat (80 units) than Home (20 units) if it dedicated all of its resources to wheat production — the horizontal intercept.

Foreign also has an absolute advantage in producing cars, since it requires only 8 workers to produce 1 car, compared to Home's 10 workers. Also see that Foreign can produce more cars (20 units) than Home (10 units) if it dedicated all of its resources to car production — the vertical intercept.

4. Find each country's opportunity cost of producing each good.

Country	1 Wheat	1 Car
Home	0.5 cars	2 wheat
Foreign	0.25 cars	4 wheat

Each country's opportunity cost of wheat is the slope of its PPF: the relative price of wheat, or, the number of cars needed to be given up to produce 1 additional unit of wheat.

Each country's opportunity cost of cars is the *inverse* of the slope of its PPF: the relative price of cars, or, the number of wheat needed to be given up to produce 1 additional car.

5. Which country has a *comparative* advantage in producing each good? Why?

Home has a comparative advantage in producing cars since it has a lower opportunity cost in car production. It only gives up 2 wheat vs. Foreign gives up 4 wheat per car.

Foreign has a comparative advantage in producing wheat since it has a lower opportunity cost in wheat production. It only gives up 0.25 cars vs. Home gives up 0.5 cars per 1 wheat.

6. Which country should specialize in producing which good?

Each country should specialize in producing the good for which they have the lower opportunity cost: Home should specialize in cars and Foreign should specialize in wheat.

7. What will the range of possible terms of trade be?

The price of each good (in terms of the other) must fall between the opportunity cost of each country to produce that good. Thus is because a country will only buy (import) a good if it can get a price *cheaper* than it costs it to produce at home, and a country will only sell (export) a good if it can get a price *higher* than its cost of production:

Simply look down each column for each good in the table above.

$$\begin{aligned} 0.25 \text{ cars} < p_W < 0.5 \text{ cars} \\ 2 \text{ wheat} < p_C < 4 \text{ wheat} \end{aligned}$$