

Setup: France can produce 2 goods (airplanes and wine) using labor (L) that is mobile between the 2 sectors. Capital machinery (K) is specific to producing airplanes. Vineyards (V) are specific to producing wine.

1. Use a bucket diagram to show how French labor (L) is allocated between airplanes and wine.
  - a. What is the equation describing the demand for labor in each sector?
  - b. What conditions must be met for the labor allocation to be a stable equilibrium?
  
2. Redraw the bucket diagram, and let the price of wine fall.
  - a. What happens to the labor demand curve in the airplane sector?
  - b. What happens to the labor demand curve in the wine sector?
  - c. What happens to the allocation of labor and why?
  - d. What happens to the real and the nominal labor wage?
  - e. What happens to the returns to K and V?
  
3. Draw a PPF for France. Put the output of wine on the vertical axis and the output of airplanes on the horizontal axis.
  - a. Explain why the PPF looks different from the one we drew for the Ricardian model.
  - b. Pick an output ratio (wine/airplanes) = 1. What is the slope of the French PPF at this output ratio equal to and why? (I want an equation here, not a number.)
  - c. Decrease the output ratio (wine/airplanes) to 1/2. How has the slope of the French PPF changed and why?
  
4. Use what you have learned from questions 2 and 3 to draw a relative supply (RS) curve showing how the relative output of wine/airplanes changes as the relative price of wine/airplanes changes.

Consider a second country, Chile. Chile has the same size labor force (L), the same number of vineyards (V), the same demand for and the same technology for producing airplanes and wine as France. However, France has more airplane capital,  $K^F > K^C$ .

5. Recopy the French PPF from question 3.
  - a. On the same graph, draw the Chilean PPF.
  - b. Pick an output ratio (wine/airplanes) = 1. Compare the slopes of the French and Chilean PPF's at this output ratio.
  
6. Recopy the French relative supply curve wine/airplanes from question 4.
  - a. On the same graph, draw the Chilean RS curve.
  - b. Combine this with a relative demand curve to show how relative prices of the two goods differ across the two countries in autarky.

7. Now that you know autarky prices (comparative advantage), we can analyze trade and its effects on each economy.
  - a. Describe the pattern of trade and changes in the pattern of output in each country.
  - b. Copy the RS curves from question 6 and show how each country moves along their RS curve as a result of trade. Show the point at which these countries stop specializing (hint: check the arbitrage conditions).
  - c. For each country separately, compare autarky relative prices (wine/airplanes) to free trade prices in each country. (Hint: do they move up? down? stay the same?)
  - d. How do these goods price changes affect the return to K and V in France? In Chile?
  
8. Welfare gains.
  - a. Redraw the French PPF and show movement along the PPF as a result of the move from autarky to free trade.
  - b. Show the new consumption frontier.
  - c. Look at the French economy in the aggregate. Has it gained or lost from trade? Has Chile?
  - d. Is there anyone in France who might, on pure economic grounds, oppose the move to freer trade? In Chile?