

# Answer Key 1

## Comparative Advantage

Econ 101  
Professor Guse

Al and Carl both like to consume wine and bread and both are capable of producing wine and bread. Carl can make up to 60 loaves of bread per month. For each bottle of wine he makes his bread output drops by a  $\frac{1}{2}$  loaf. Al can make up to 20 bottles of wine per month. For each loaf of bread he bakes his wine output decreases by a  $\frac{1}{2}$  bottle.

1. Draw Al's monthly *production possibility frontier* - the set of output combinations he is capable of producing.
2. Suppose Al is currently producing and consuming on his PPF making 10 bottles of wine per month.
  - (a) Mark this point in your picture of Al's PPF. **ANSWER:** See figure 1.
  - (b) How many loaves of bread does Al bake each month? **ANSWER:** 20 loaves. See figure 1.
  - (c) What is Al's opportunity cost of increasing his wine output by 1 bottle to 11 / month? **ANSWER:** 2 loaves for each extra bottle of wine he makes. This is because Al's PPF has a slope of 2 loaves per bottle everywhere.
  - (d) What is Al's opportunity cost of increasing his bread output by 1 loaf per month? **ANSWER:** The inverse of the previous answer -  $\frac{1}{2}$  bottle of wine per loaf.

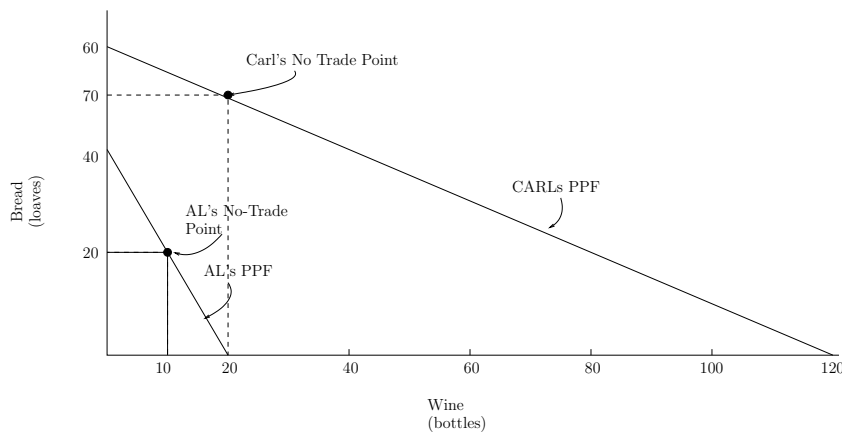


Figure 1. Without trading, both players are producing *and* consuming on their individual PPFs.

3. Draw Carl's monthly *production possibility frontier* - the set of output combinations he is capable of producing.
4. Suppose Carl is currently producing and consuming on his PPF making 20 bottles of wine per month.
  - (a) Mark this point in your picture of Carl's PPF. **ANSWER:** See figure 1.
  - (b) How many loaves of bread does Carl bake each month? **ANSWER:** 50 Loaves. See figure 1.
  - (c) What is Carl's opportunity cost of increasing his wine output by 1 bottle per month? **ANSWER:**  $\frac{1}{2}$  loaf for each extra bottle he makes. This is because Carl's PPF has a slope of  $\frac{1}{2}$  loaf per bottle everywhere.
  - (d) What is Carl's opportunity cost of increasing his bread output by 1 loaf per month? **ANSWER:** The inverse of the previous answer - 2 bottles of wine per loaf.
5. Draw Al and Carl's combined PPF and mark the current production and consumption point. **ANSWER:** See Figure 2.

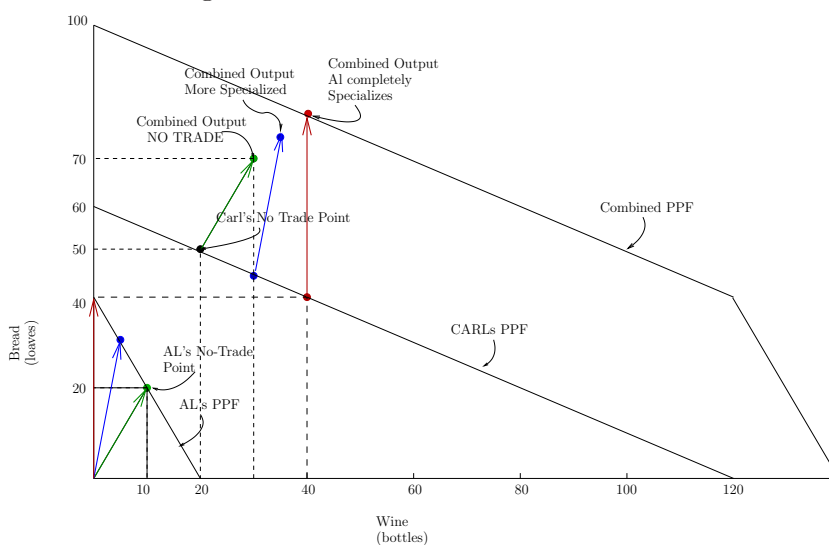


Figure 2. By specializing in their respective comparative advantage production activities, total output in both goods can be increased. The blue point on Al's PPF represents increased specialization - Al making more bread and less wine. The blue point on Carl's PPF represents some increased specialization on his part - more wine and less bread. Notice that the combined output exceeded the NO TRADE combined output in both goods. If Al completely specializes in bread, the combined output reaches the combined PPF. An example of this case is marked in red.

6. Propose a production and distribution scheme in which both Al and Carl are still producing on their individual PPF and can each increase their consumption of *both* goods by one unit. Mark this point in your combined PPF diagram. **ANSWER:** Basically have Al make more bread and less wine, Carl make more wine and less bread, then have Al trade some of his bread for some of Carl's wine. For example, have Al make 30 loaves of bread instead of 20.

This forces Al to reduce his wine output to 5 bottles. Then have Carl increase his wine output by 10 bottles which reduces his bread output by 5 loaves. Now have Carl give 7 bottles of wine to Al and have Al give 7 loaves of bread to Carl. Under this scheme, depicted in blue in Figure 2, total bread output would increase by 5 and total wine output would increase by 5 bottles. Moreover, Carl's bread consumption would increase by 2 loaves and his wine consumption by 3 bottles. While Al's bread consumption would increase by 3 loaves and his wine consumption would increase by 2 bottles. Many possibilities here.

7. Answer question 1 in "Test Yourself Questions" at the end of Chapter 3 in the Baumol and Blinder Text:

A person rents a house for which she pays the landlord \$12,000 per year. The house can be purchased for \$100,000, and the tenant has this much money in a bank account earning 4% interest. Should she buy? Explain using opportunity cost.

**ANSWER:** Assume that the house will always be worth \$100,000 (no appreciation and no depreciation) and that annual property taxes and maintenance on the house add up to  $X$ . Assume also that rent is collected at the end of the lease. (This won't make too much of a difference.) No consider renting. This would entail keeping the \$100,000 in the bank, earning \$4,000 in interest and paying \$12,000 in rent. At the end of the year the renter would have total assets of \$92,000. Next consider buying. In this case the \$100,000 is spent to purchase the house, no rent is paid, and the owner-resident is responsible for taxes and maintenance of  $X$ . At the end of the year, the owner's total assets are \$100,000 -  $X$ . Hence as long as the annual out-of-pocket expenses (property taxes and maintenance) do not exceed \$8,000, it is worth buying. The opportunity cost of buying consists on the property taxes, maintenance expenses *AND* lost interest (\$4,000). The opportunity cost of renting is the lost rent (\$12,000).