

Elements of Microeconomics: TA Session

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September 6, 2024

Comparative advantage and trade

Absolute advantage: The producer that requires a smaller quantity of inputs to produce good X is said to have absolute advantage in producing good X

Comparative advantage: The producer who gives up less of the other good to produce good X is said to have comparative advantage in producing good X

Comparative advantage is closely related to opportunity cost

Comparative advantage and trade

- ▶ In a two-producer, two-good economy, it is possible for a producer to have absolute advantage in both goods
- ▶ But it is impossible for a producer to have comparative advantage in both goods
- ▶ The gains from trade: When people produce goods in which they have comparative advantage, total production rise
- ▶ Price of the trade: for both parties to gain from trade, the price must lie between their opportunity costs

From Adam Smith

“The greatest improvement in the productive powers of labour, and the greater part of the skill, dexterity, and judgement with which it is any where directed, or applied, seem to have been the effects of the division of labour.” (*Wealth of Nations*, 1776)

Comparative advantage and trade

During their band's world tour, Noel and Liam crashed their plane on a desert island during their trans-Atlantic flight to US.

Resources on the island are unlimited but time is limited, with which two goods can be produced: chicken and wine. The following table shows how much of the two goods they're able to produce in a week if each person produces only one good.

Production	Chicken	Wine
Noel	5 kg	10 bottles
Liam	2 kg	8 bottles

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1. Who has absolute advantage in producing chicken? What about wine?
2. Who has comparative advantage in producing chicken? What about wine?

Comparative advantage and trade

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3. Draw Noel and Liam's respective PPF under autarky (i.e. without trade)
4. Draw Noel and Liam's *joint* PPF with trade
5. On top of question (3), draw Noel and Liam's respective consumption possibilities frontier at a price of 3 bottles of wine per kg of chicken

Comparative advantage and trade

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- Suppose Noel wants 4 kg of chicken and as much wine as possible per week, and Liam wants 5 bottles of wine and as much chicken as possible per week. Show how both Noel and Liam can be better off with trade
- At what range of prices can trade happen?

Comparative advantage and trade - explained

1. It takes Noel $\frac{1}{5}$ week to produce 1 kg of chicken, and it takes Liam $\frac{1}{2}$ week. So Noel has absolute advantage in producing chicken.

It takes Noel $\frac{1}{10}$ week to produce 1 bottle of wine, and it takes Liam $\frac{1}{8}$ week. So Noel has absolute advantage in producing wine.

2. Noel's opportunity cost of producing 1 kg of chicken (in terms of wine) is 2 bottles of wine, whereas Liam's is 4 bottles.

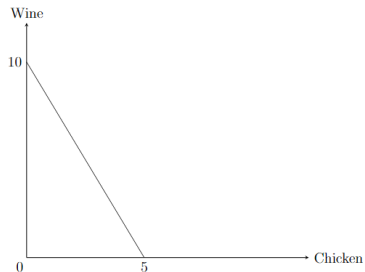
Noel's opportunity cost is less, so Noel has comparative advantage in producing chicken.

Noel's opportunity cost of producing 1 bottle of wine (in terms of chicken) is 0.5 kg of chicken, whereas Liam's is 0.25 kg. Liam's opportunity cost is less, so Liam has comparative advantage in producing wine.

Comparative advantage and trade - explained

3.

Noel's PPF:

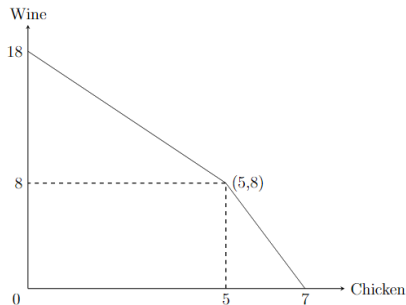


Liam's PPF:



Comparative advantage and trade - explained

4. The joint PPF:

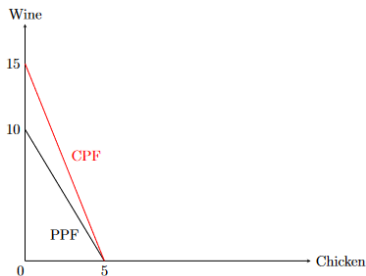


To see why, start at the point (0,18) where both Noel and Liam produce wine only. To maximize production, we would want the person with lower opportunity cost of producing chicken to start producing chicken first, which is Noel. Hence the line from (0,18) to (5,8), where full specialization occurs. Then Liam starts producing chicken, up to the point (7,0) where both of them produce chicken only.

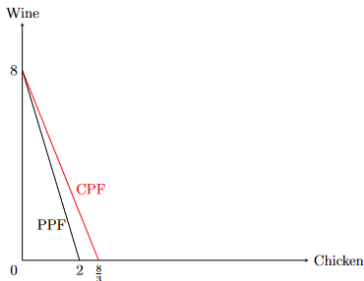
Comparative advantage and trade - explained

5.

Noel's CPF:



Liam's CPF:



Note that the slope of the CPF equals the price of trade: 3 bottles of wine per kg of chicken.

Comparative advantage and trade - explained

6. Looking at the PPFs in question (6), with autarky, Noel can produce 2 bottles of wine along with 4 kg of chicken; Liam can produce 0.75 kg of chicken along with 5 bottles of wine.

With trade, Noel only produces the good in which he has comparative advantage — chicken, and Liam only produces wine. Noel can produce 5 kg of chicken per week, and Liam can produce 8 bottles of wine.

They can trade at a price of 3 bottles of wine per kilogram of chicken. Noel sells 1 kg of chicken in exchange for 3 bottles of wine, ending up with 3 bottles of wine along with 4 kg of chicken; Liam ends up with 1kg of chicken along with 5 bottles of wine (see also the CPFs in question 6). Both of them are better off compared with autarky.

Comparative advantage and trade - explained

7. Trade happens voluntarily when the price lies between Noel and Liam's opportunity costs, that is to say, between 2 and 4 bottles of wine per kilogram of chicken.

To see why, suppose the price falls out of this range, say 1 bottle of wine per chicken. Then the price is below both persons' opportunity cost of chicken. Then, both of them would like to buy chicken with wine, but the market has no chicken sellers!