

Ricardian gains from trade

- Germany
 - Can produce 1 kg cheese or 0.5 car per labor hour
 - Opportunity costs: 0.5 car/kg or 2 kg/car
- France
 - Can produce 2 kg cheese or 0.25 cars per labor hr
 - Opportunity costs: 0.125 car/kg or 8 kg/car
- Absolute advantage
 - Germany: cars ($2 < 8$)
 - France: cheese ($0.125 < 0.5$)

Gains from trade

- Germany will get cheese from France if it is cheaper than domestic cheese
 - Trade price must be less than 0.5 cars/kg of cheese
- France will get cars from Germany if they are cheaper than domestic cars
 - Trade price must be greater than 0.125 cars/kg
- Any trade price between 0.125 and 0.5 cars/kg will benefit both parties
- We can express this range as 2 to 8 kg/car
- (“Trade price” same as “terms of trade”)

Mutually favorable trade prices

- The Ricardian model gives us a range of possible trade prices, not definite amounts

Terms of trade	Remark
1 kg/car	Unfavorable to Germany, very favorable for France: NO DEAL
3 kg/car	Slightly favorable to G, very favorable for F
5 kg/car	Roughly equal favorability
7 kg/car	Very favorable to G, slightly favorable for F
9 kg/car	Very favorable to G, unfavorable for F: NO DEAL

How trade prices are determined

- The negotiated trade price will tend to be more favorable to Germany if
 - German consumers are very eager to have more cheese and/or French consumers are not so eager to have more cars
 - Germany is a much larger market than France (more consumers)
 - Germans are skilled negotiators
- France: vice versa

Now we change the game

- Germany
 - Can produce **2 kg** cheese or 0.5 car per labor hour
 - Opportunity costs: 0.25 car/kg or 4 kg/car
- France
 - Can produce **1 kg** cheese or **0.1 car** per labor hour
 - Opportunity costs: 0.1 car/kg or 10 kg/car
- Absolute advantage
 - Germany: cars ($4 < 10$)
 - Germany: cheese ($0.1 < 0.25$)

Any trade price between 4 and 10 kg/
car will be favorable to both

- The Ricardian model gives us a range of possible trade prices, not definite amounts

Terms of trade	Remark
3 kg/car	Unfavorable to Germany, very favorable for France: NO DEAL
4.5 kg/car	Slightly favorable to G, very favorable for F
6.5 kg/car	Roughly equal favorability
9.5 kg/car	Very favorable to G, slightly favorable for F:
11 kg/car	Very favorable to G, unfavorable to F: NO DEAL

Comparative advantage

- A producer has an absolute advantage in a particular good if they can produce more of it per unit of input (labor, etc.)
- In our second example, Germany had an absolute advantage in production of both cheese and cars
- A producer has a comparative advantage in a particular good if its opportunity cost is lower

France and Germany comparative advantages

- Germany's opportunity cost for cars is lower (4 kg/car vs. 10 kg/car for France)
- Germany has a comparative advantage in producing cars
- France's opportunity costs for cheese is lower (0.1 car/kg vs. 0.25 car/kg for Germany)
- France has a comparative advantage in producing cheese

Comparative advantage in general

- When considering two countries (A,B) and two products (X,Y):
- If country A has a comparative advantage in producing X, then country B necessarily has a comparative advantage in producing Y
- True even if one country enjoys an absolute advantage in both X and Y
- Exception: if opportunity costs are exactly equal, there is no comparative advantage. We will ignore this special case

Opening of trade

- Suppose 100 hours of labor are available per week in both Germany and France
- Germany is producing this combination:

Product	Hours devoted	Output
Cheese	60	$60 \times 2 = 120$ kg
Cars	40	$40 \times 0.5 = 20$ cars

- France is producing

Product	Hours devoted	Output
Cheese	50	$50 \times 1 = 50$ kg
Cars	50	$50 \times 0.1 = 5$ cars

Opening of trade

- Now trade opens up. Trade price = 5 kg/car
- Germany reduces cheese production, increases car production, trades away 4 cars for 20 kg

Item	Hours	Amounts
Cheese produced	50	$50 \times 2 = 100$ kg
Cars produced	50	$50 \times 0.5 = 25$ cars
Cars exported		4 cars
Cheese imported		20 kg
Car consumption		$25 - 4 = 21$
Cheese consumption		$100 + 20 = 120$

Opening of trade

- France increases cheese production, reduces car production, trades away 20 kg for 4 cars

Item	Hours	Amounts
Cheese produced	80	$80 \times 1 = 80$ kg
Cars produced	20	$20 \times 0.1 = 2$ cars
Cheese exported		20 kg
Cars imported		4 cars
Cheese consumption		$80 - 20 = 60$ kg
Car consumption		$2 + 4 = 6$ cars

Increased consumption due to opening of trade

Item	Before	After	Net gain/loss
Germany cheese consumption	120 kg	120 kg	No change
Germany car consumption	20 cars	21 cars	+1 car
France cheese consumption	50 kg	60 kg	+10 kg
France car consumption	5 cars	6 cars	+1 car
Total cheese consumption			0+10 = 10 kg
Total car consumption			1+1 = 2 cars

Gains from trade

- The Ricardian model provides an important conclusion that is not widely understood:
 - *Gains from trade are possible even when one party is less productive in all goods/services*
- This is a special case of Adam Smith's observation of gains from specialization and trade
- Stated in terms that even Donald Trump might understand: *even a klutz can gain from trade!*

Key concepts and calculations

- Absolute advantage
- Comparative advantage
- Terms of trade
- Calculation of gains from a given trade situation