



A Numerical Example

Unit labor requirements for home and foreign countries

	Cheese	Wine
Home	$a_{LC} = 1$ hour/lb	$a_{LW} = 2$ hours/gallon
Foreign	$a^*_{LC} = 6$ hours/lb	$a^*_{LW} = 3$ hours/gallon

- What is the home country's opportunity cost of producing cheese? $a_{LC} / a_{LW} = 1/2$, to produce one pound of cheese, stop producing $1/2$ gallon of wine.



A Numerical Example (cont.)

- The home country is more efficient in both industries, but has a comparative advantage only in cheese production.

$$1/2 = a_{LC} / a_{LW} < a_{LC}^* / a_{LW}^* = 2$$

- The foreign country is less efficient in both industries, but has a comparative advantage in wine production.



A Numerical Example (cont.)

- With trade, the equilibrium relative price of cheese to wine settles between the two opportunity costs of cheese.
- Suppose that the intersection of RS and RD occurs at $P_C/P_W = 1$ so one pound of cheese trades for one gallon of wine.
- Trade causes the relative price of cheese to rise in the home country and fall in foreign.



A Numerical Example (cont.)

- With trade, the foreign country can buy one pound of cheese for $P_C / P_W =$ one gallon of wine,
 - instead of stopping production of $a_{LC}^* / a_{LW}^* = 2$ gallons of wine to free up enough labor to produce one pound of cheese in the absence of trade.
 - Suppose $L^* = 3,000$. The foreign country can trade its 1,000 gallons maximum production of wine for 1,000 pounds of cheese, instead of the 500 pounds of cheese it could produce itself.



A Numerical Example (cont.)

- With trade, the home country can buy one gallon of wine for $P_W / P_C =$ one pound of cheese,
 - instead of stopping production of $a_{LW} / a_{LC} =$ two pounds of cheese to free up enough labor to produce one gallon of wine in the absence of trade.
- The home country can trade its 1,000 pounds maximum production of cheese for 1,000 gallons of wine, instead of the 500 gallons of wine it could produce itself.



Relative Wages

- **Relative wages** are the wages of the home country relative to the wages in the foreign country.
- Productivity (technological) differences determine relative wage differences across countries.
- The home wage relative to the foreign wage will settle in between the ratio of how much better Home is at making cheese and how much better it is at making wine compared to Foreign.
- Relative wages cause Home to have a cost advantage in only cheese and Foreign to have a cost advantage in only wine.



Relative Wages (cont.)

- Suppose that $P_C = \$12/\text{pound}$ and $P_W = \$12/\text{gallon}$.
- Since domestic workers specialize in cheese production after trade, their hourly wages will be

$$P_C/a_{LC} = \$12 / 1 = \$12$$

- Since foreign workers specialize in wine production after trade, their hourly wages will be

$$P_W/a_{LW}^* = \$12/3 = \$4$$

- The relative wage of domestic workers is therefore
 $\$12/\$4 = 3$



Relative Wages (cont.)

- The relative wage lies between the ratio of the productivities in each industry.
 - The home country is $6/1 = 6$ times as productive in cheese production, but only $3/2 = 1.5$ times as productive in wine production.
 - The home country has a wage 3 times higher than the foreign country.



Relative Wages (cont.)

- These relationships imply that both countries have a *cost advantage* in production.
 - High wages can be offset by high productivity.
 - Low productivity can be offset by low wages.
- In the home economy, producing one pound of cheese costs \$12 (one worker paid \$12/hr) but would have cost \$24 (six paid \$4/hr) in Foreign.
- In the foreign economy, producing one gallon of wine costs \$12 (three workers paid \$4/hr) but would have cost \$24 (two paid \$12/hr) in Home.



Relative Wages (cont.)

- Because foreign workers have a wage that is only $\frac{1}{3}$ the wage of domestic workers, they are able to attain a cost advantage in wine production, despite low productivity.
- Because domestic workers have a productivity that is 6 times that of foreign workers in cheese production, they are able to attain a cost advantage in cheese production, despite high wages.