

Ricardian Model (1/30/2012)

Econ 390-001

Equations

- $a_{LC}Q_C + a_{LW}Q_W \leq L$
 - $Q_W = L/a_{LW} - (a_{LC}/a_{LW})Q_C$
 - L/a_{LW}
 - $-(a_{LC}/a_{LW})$
 - $Q_C = L/a_{LC}, Q_W = 0$
 - $Q_W = L/a_{LW}, Q_C = 0$
- $w_C = P_C/a_{LC}$
- $w_W = P_W/a_{LW}$
- $a_{LC} < a_{LC}^*$
- $a_{LC}/a_{LW} < a_{LC}^*/a_{LW}^*$
 - a_{LC}/a_{LW}
- wage insights (go with higher wage)
 - $P_C/a_{LC} > P_W/a_{LW}$
 - $P_C/a_{LC} < P_W/a_{LW}$
 - $P_C/a_{LC} = P_W/a_{LW}$
- opportunity cost insights (if price beats OC)
 - $P_C/P_W > a_{LC}/a_{LW}$
 - $P_C/P_W < a_{LC}/a_{LW}$
 - $P_C/P_W = a_{LC}/a_{LW}$
- $RS = (Q_C + Q_C^*)/(Q_W + Q_W^*)$
 - $P_C/P_W = a_{LC}/a_{LW}$
 - $RS = (L/a_{LC})/(L^*/a_{LC}^*)$
 - $P_C/P_W = a_{LC}^*/a_{LW}^*$
- $(P_C/a_{LC})/(P_W/a_{LW}^*)$
 - $w = w_C = P_C/a_{LC}$
 - $w^* = w_W^* = P_W/a_{LW}^*$
- $a_{L1}^*/a_{L1} > a_{L2}^*/a_{L2} > a_{L3}^*/a_{L3}$
 - a_{Li}^*/a_{Li}
 - $a_{L1}^*/a_{L1} > a_{L2}^*/a_{L2} > w/w^* > a_{L3}^*/a_{L3}$

country production possibilities frontier (PPF)

linear formulation

y-intercept

slope

max cheese

max wine

wage for cheese

wage for wine

absolute advantage for home in cheese

comparative advantage for home in cheese

opportunity cost of cheese

produce only cheese

produce only wine

produce both

produce only cheese

produce only wine

produce both

world relative supply curve

1st step

jumps when totally specialized

2nd step

relative wage (specialized countries)

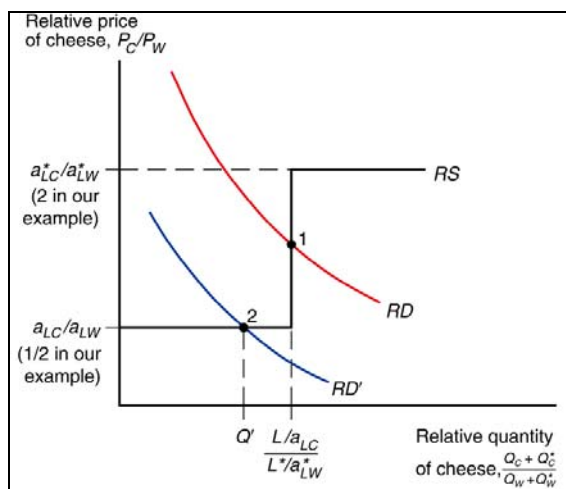
wage in home country

wage in foreign country

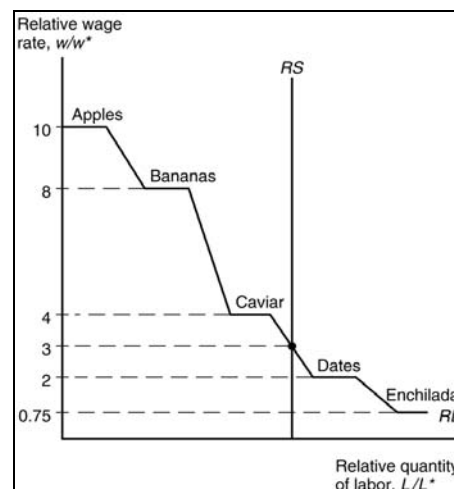
multi-good economy

relative productivity (> means home better)

cut linup at relative wage rates (home left, foreign right)



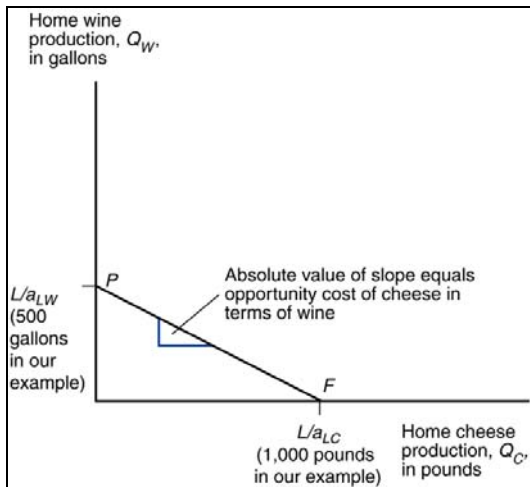
2 good Ricardian model



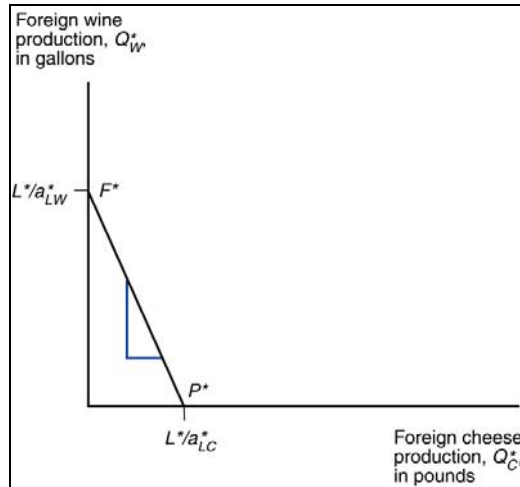
Many good Ricardian model

Variable definitions

- unit labor requirements (*high unit labor means low productivity*)
 - $a_{LC} \equiv$ unit labor requirement for cheese in home country
 - $a_{LC}^* \equiv$ unit labor requirement for cheese in foreign country
 - $a_{LW} \equiv$ unit labor requirement for wine in home country
 - $a_{LW}^* \equiv$ unit labor requirement for wine in foreign country
- labor
 - $L \equiv$ total labor hours in home country
 - $L^* \equiv$ total labor hours in foreign country
- production
 - $Q_C \equiv$ cheese production in home country
 - $Q_C^* \equiv$ cheese production in foreign country
 - $Q_W \equiv$ wine production in home country
 - $Q_W^* \equiv$ wine production in foreign country
- price
 - $P_C \equiv$ unit price of cheese
 - $P_W \equiv$ unit price of wine
- wage
 - $w_C \equiv$ hourly wage for cheese
 - $w_W \equiv$ hourly wage for wine
 - $w \equiv$ wage in home country
 - $w^* \equiv$ wage in foreign country



Home PPF



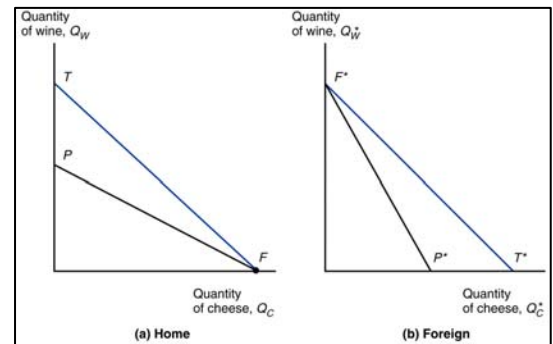
Foreign PPF

Definitions

- **opportunity cost** – the cost of an activity in terms of a foregone alternative
- **absolute advantage** – the ability of a country to produce a product using fewer resources than other countries
- **comparative advantage** – the ability of a country to produce a product at a lower opportunity cost than other countries
- **productivity** – amount of product produced in a unit of time
- **unit labor requirement** – number of hours of labor required to produce a unit of product
- **production possibility frontier** – maximum possible production of two products at different mixes
- **nontraded goods** – goods each country produces for itself (no imports or exports)
- **relative wage** – ratio of the amount workers are paid per hour in two countries
- **autarky** – economic self-sufficiency; no trade

Principles

- Two reasons for trade (micro and macro)
 - Smithean (efficiency / economies of scale)
 - Ricardian (comparative advantage)
- Adam Smith detailed the benefits of specialization and division of labor *The Wealth of Nations*.
 - Each worker could become an expert in a small area, greatly increasing efficiency.
- David Ricardo came up with the *Law of Association* (comparative advantage).
 - Even if someone is *absolutely* more productive at 2 activities, if he is *comparatively* more productive at 1 activity than another relative to someone else, he should specialize and trade.
- Trade makes both countries better off.
- Conceptualizing *gains from trade*:
 - *indirect production*
 - A country can produce wine, or produce cheese and trade it for wine.
 - The latter is indirectly producing wine.
 - *expanded consumption*
 - Comparative advantage & specialization leads to an increase in world production.
 - Trade allows each country to expand consumption beyond production possibilities.
 - *conservation of resources*
 - Instead of expanding production and consumption, the world can produce the same amount as before but do it more efficiently.
 - In the Ricardian model this means leftover labor hours (liesure).
 - In other models it could mean saved land/capital.
- One of the reasons countries specialize in a particular good is because of climate.
 - You can grow oranges in Alaska with heat lamps, but that would be very inefficient!
 - Winter in the northern hemisphere = summer in the southern hemisphere.
 - Agricultural products may be shipped between Brazil and the U.S. when out of season.
- Ricardian model assumptions
 1. Labor is the only factor of production
 2. Labor productivity varies across countries
 - due to differences in technology
 3. Labor productivity in each country is constant
 4. Supply of labor in each country is constant
 5. Two goods: wine and cheese
 6. Labor gets all good revenues through wages
 - Works in industry paying highest wage
 7. Two countries: home and foreign
- Ricardian model insights:
 - With constant prices, relative prices will dictate the proportions of the goods produced.
 - In a single factor economy all the profit accrues to that factor (labor).
 - Labor will go to where it can earn the highest wages.
 - In general the relative wage (w/w^*) will be between the productivity advantages.
 - Empirically wages are proportional to productivity.
- These myths are false
 - ~~Free trade is beneficial only if a country is more productive than foreign countries.~~
 - ~~Free trade with countries that pay low wages hurts high wage countries.~~
 - ~~Free trade exploits less productive countries.~~
- Why don't countries completely specialize?
 - >1 factor of production
 - protectionism
 - transportation costs



Gains from trade: expanded consumption