The Ricardian Theory of Trade

511-E4 International Trade

The Ricardian Model

- Please see Chapter 3 (Labor Productivity and Comparative Advantage: The Ricardian Model) in *International Economics*, ninth edition, by Krugman, Obstfeld, and Melitz.

The Ricardian Assumptions—Basics

- There are
  - two countries, Home and Foreign
  - two goods, Cheese and Wine, and
  - one resource, Labor
    - Labor is used to produce cheese and wine

The Ricardian Assumptions—Preferences

- The preferences of all consumers in the world are *identical*.

- *Q*: This is obviously untrue. Why then does David Ricardo assume identical preferences?
- *A*: Ricardo wants to show that technological differences between countries can lead to trade. To accomplish this goal he needs to show the existence of trade among two countries that differ *only* in technology.

Relative Price of Cheese: Example

- The **dollar price** of wine, P_W, is \$5 per gallon
- The dollar price of cheese, P_C, is \$20 per pound
- Then the **relative price** of cheese is 4 gallons of wine per pound of cheese, and
- Therefore, the relative price of cheese is the wine-equivalent of whatever one pays to buy cheese (P_C/P_W)

Relative Price of Wine: Example

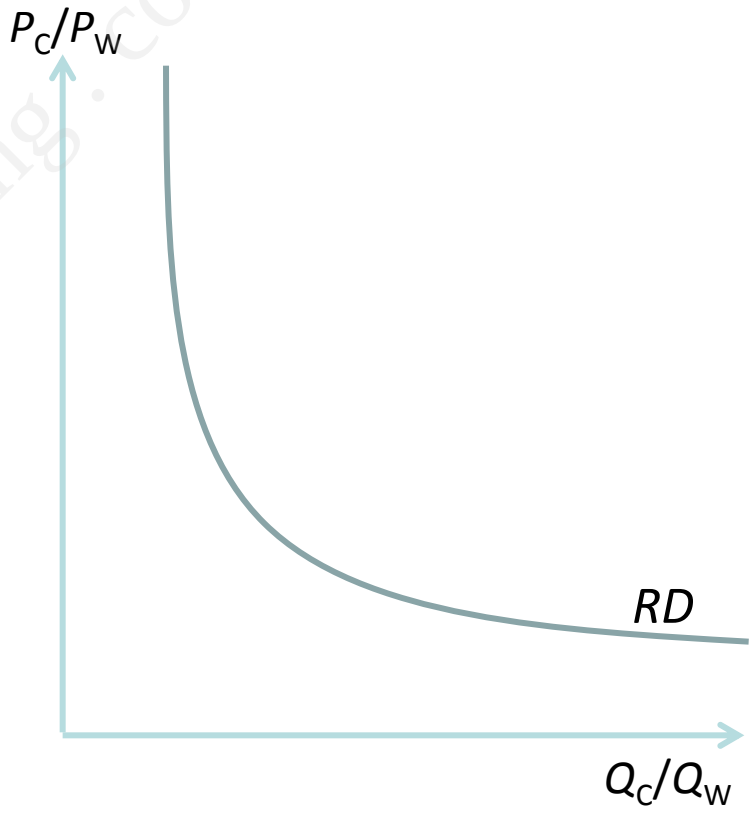
- The **dollar price** of wine, P_W, is \$5 per gallon
- The dollar price of cheese, P_C, is \$20 per pound
- Then the **relative price** of wine is ¼ pound of cheese per gallon of wine, and
- Therefore, the relative price of wine is the cheese-equivalent of whatever one pays to buy wine (P_W/P_C)

Relative Prices

- We just saw that the relative price of wine is P_W/P_C and the relative price of cheese is P_C/P_W
- Therefore, the relative price of wine and the relative price of cheese are reciprocals
  - Their product must be the number one (1)
- Therefore, if one relative price increases, the other necessarily decreases

The Relative Demand Curve

- The **relative demand curve** shows the relative quantities bought by consumers at all possible values of the relative price
  - See Figure 3-3 in the textbook



As cheese becomes more expensive relative to wine (P_C/P_W↑) the consumption of cheese decreases relative to wine (Q_C/Q_W↓).

The Ricardian Assumptions—Technology

- Goods are produced (out of labor) with technologies that satisfy Constant Returns to Scale.
  - That is, if the amount of labor employed in wine (respectively, cheese) production is doubled, then the amount of wine (respectively, cheese) produced will also double.
  - Put another way, the **unit labor requirement** in wine (respectively, cheese) production is constant

Technology—Our Example

Unit Labor requirements		
	Cheese	Wine
Home	1 hour per pound $a_{C,H} = 1$	2 hours per gallon $a_{W,H} = 2$
Foreign	6 hours per pound $a_{C,F} = 6$	3 hours per gallon $a_{W,F} = 3$

We will be using this specific example throughout this lecture

Opportunity Costs

- The opportunity cost of a gallon of wine is the number of pounds of cheese you will no longer have the resources to produce if you produce a gallon of wine (C_{WC})

Example: Opportunity Cost

Unit Labor requirements		
	Cheese	Wine
Home	1 hour per pound	2 hours per gallon
Foreign	6 hours per pound	3 hours per gallon

Opportunity Cost		
	Cheese C_{CW}	Wine C_{WC}
Home		
Foreign		

Example: Opportunity Cost

Unit Labor requirements		
	Cheese	Wine
Home	1 hour per pound	2 hours per gallon
Foreign	6 hours per pound	3 hours per gallon

Opportunity Cost		
	Cheese C_{CW}	Wine C_{WC}
Home	½ gallons of wine	
Foreign		

Example: Opportunity Cost

Unit Labor requirements		
	Cheese	Wine
Home	1 hour per pound	2 hours per gallon
Foreign	6 hours per pound	3 hours per gallon

Opportunity Cost (A commodity's opportunity cost is computed as its unit labor requirement divided by the other commodity's unit labor requirement.)		
	Cheese C_{CW}	Wine C_{WC}
Home	½ gallons of wine	2 pounds of cheese
Foreign		

Example: Opportunity Cost

Unit Labor requirements		
	Cheese	Wine
Home	1 hour per pound	2 hours per gallon
Foreign	6 hours per pound	3 hours per gallon

Opportunity Cost (A commodity's opportunity cost is computed as its unit labor requirement divided by the other commodity's unit labor requirement.)		
	Cheese C_{CW}	Wine C_{WC}
Home	½ gallons of wine	2 pounds of cheese
Foreign	2 gallons of wine	

Example: Opportunity Cost

Unit Labor requirements		
	Cheese	Wine
Home	1 hour per pound	2 hours per gallon
Foreign	6 hours per pound	3 hours per gallon

Opportunity Cost (A commodity's opportunity cost is computed as its unit labor requirement divided by the other commodity's unit labor requirement.)		
	Cheese C_{CW}	Wine C_{WC}
Home	½ gallons of wine	2 pounds of cheese
Foreign	2 gallons of wine	½ pounds of cheese

Rational Producers

- **If $P_C/P_W > C_{CW}$, producers will be specialized in cheese production; no rational producer will make wine**
- Similarly, **if $P_C/P_W < C_{CW}$, producers will be specialized in wine production**
- Therefore, **both wine and cheese will be produced only if $P_C/P_W = C_{CW}$.**
  - **This is the autarky outcome**

Example: Autarky Relative Prices

Unit Labor requirements		
	Cheese	Wine
Home	1 hour per pound	2 hours per gallon
Foreign	6 hours per pound	3 hours per gallon

Opportunity Cost = Autarky Relative Price

This completes the demonstration of the Ricardian idea that technology differences can lead to trade. Why?

	Cheese $C_{CW} = P_C/P_W$	Wine $C_{WC} = P_W/P_C$
Home	½ gallons of wine	2 pounds of cheese
Foreign	2 gallons of wine	½ pounds of cheese

We have shown that the autarky relative price of cheese 2 in Foreign and ½ in Home. It follows that once trade is allowed, trade will occur. Home will export cheese and Foreign will export wine, in return.

Example: Specialization ($P_C/P_W < ½$)

- Note that, if, under free trade, the global relative price of cheese is less than half, then $P_C/P_W < C_{CW}$ for both countries
- Therefore, both countries must be specialized in wine
- Therefore, the relative worldwide supply of cheese (Q_C/Q_W) must be zero

Rational Producers

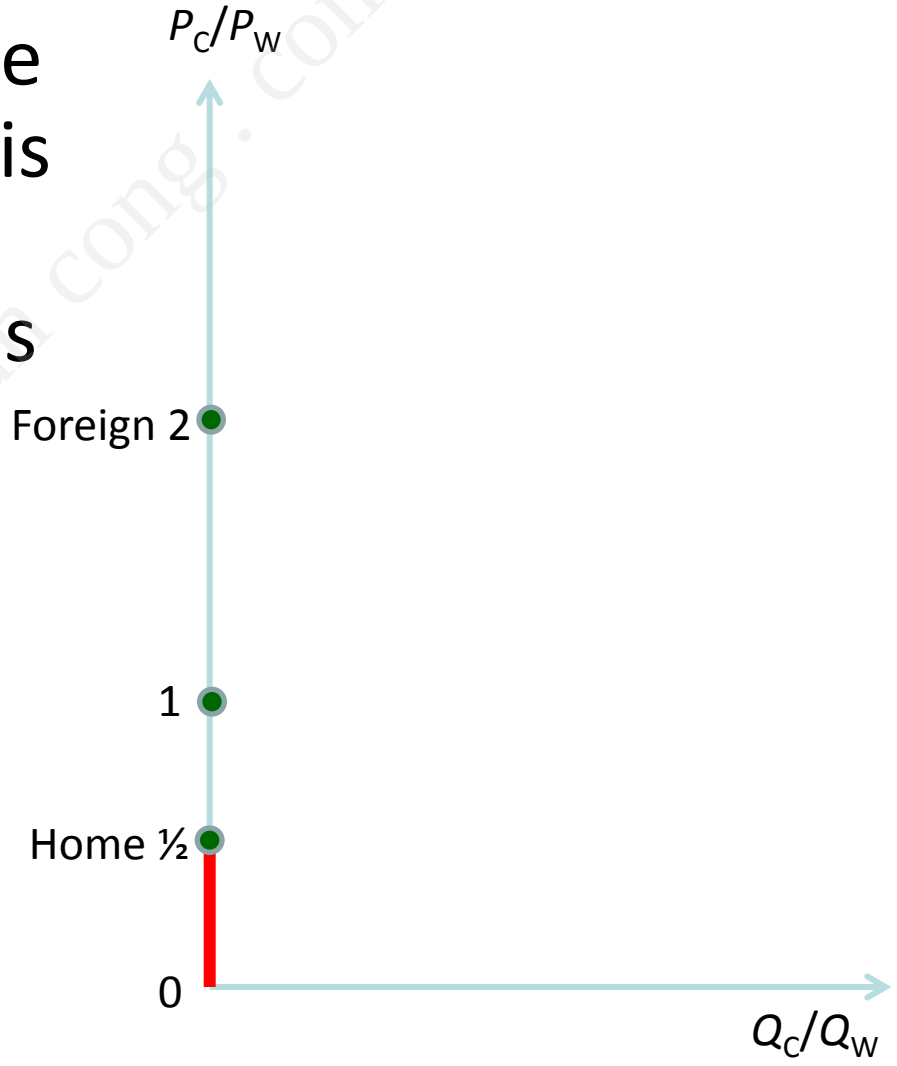
- If $P_C/P_W > C_{CW}$, producers will be specialized in cheese production; no rational producer will make wine
- Similarly, if $P_C/P_W < C_{CW}$, producers will be specialized in wine production
- Therefore, both wine and cheese will be produced only if $P_C/P_W = C_{CW}$.
  - This is the autarky outcome

Opportunity Cost		
	Cheese C_{CW}	Wine C_{WC}
Home	½ gallons of wine	2 pounds of cheese
Foreign	2 gallons of wine	½ pounds of cheese

Example: Specialization ($P_C/P_W < ½$)

- If, under free trade, the global price of cheese is less than half ($P_C/P_W < ½$), then both countries must be specialized in wine ($Q_C/Q_W = 0$)

Opportunity Cost		
	Cheese C_{CW}	Wine C_{WC}
Home	½ gallons of wine	2 pounds of cheese
Foreign	2 gallons of wine	½ pounds of cheese



Example: Specialization ($2 > P_C/P_W > ½$)

- If, under free trade, the global relative price of cheese is between two and half, then $P_C/P_W < C_{CW}$ for Foreign and $P_C/P_W > C_{CW}$ for Home
- Therefore, Foreign will specialize in wine and Home will specialize in cheese

Rational Producers

- If $P_C/P_W > C_{CW}$, producers will be specialized in cheese production; no rational producer will make wine
- Similarly, if $P_C/P_W < C_{CW}$, producers will be specialized in wine production
- Therefore, both wine and cheese will be produced only if $P_C/P_W = C_{CW}$.
  - This is the autarky outcome

Opportunity Cost		
	Cheese C_{CW}	Wine C_{WC}
Home	½ gallons of wine	2 pounds of cheese
Foreign	2 gallons of wine	½ pounds of cheese

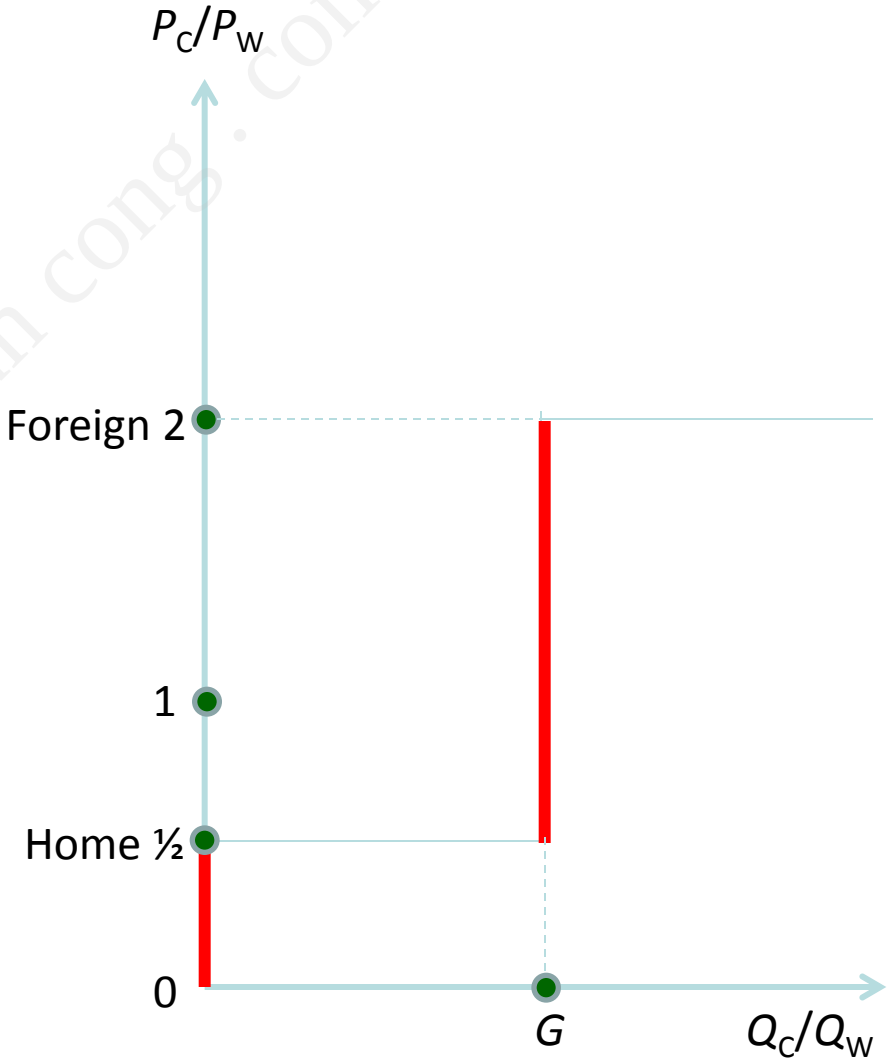
Example: Specialization ($2 > P_C/P_W > ½$)

- Therefore, the quantity of cheese produced must be L_H/a_{CH}, where L_H is the amount of labor in Home, and …
- … the quantity of wine produced must be L_F/a_{WF}, where L_F is the amount of labor in Foreign
- The ratio of the outputs, Q_C/Q_W, can then be calculated
  - This is *G* in the diagram

Example: Specialization ($2 > P_C/P_W > ½$)

- If $2 > P_C/P_W > ½$, Foreign specializes in wine and Home specializes in cheese

Opportunity Cost		
	Cheese C_{CW}	Wine C_{WC}
Home	½ gallons of wine	2 pounds of cheese
Foreign	2 gallons of wine	½ pounds of cheese



Example: Specialization ($P_C/P_W > 2$)

- Note that, if, under free trade, the global relative price of cheese is more than two, then $P_C/P_W > C_{CW}$ for both countries
- Therefore, both countries must be specialized in cheese
- Therefore, the relative worldwide supply of cheese (Q_C/Q_W) must be infinite

Rational Producers

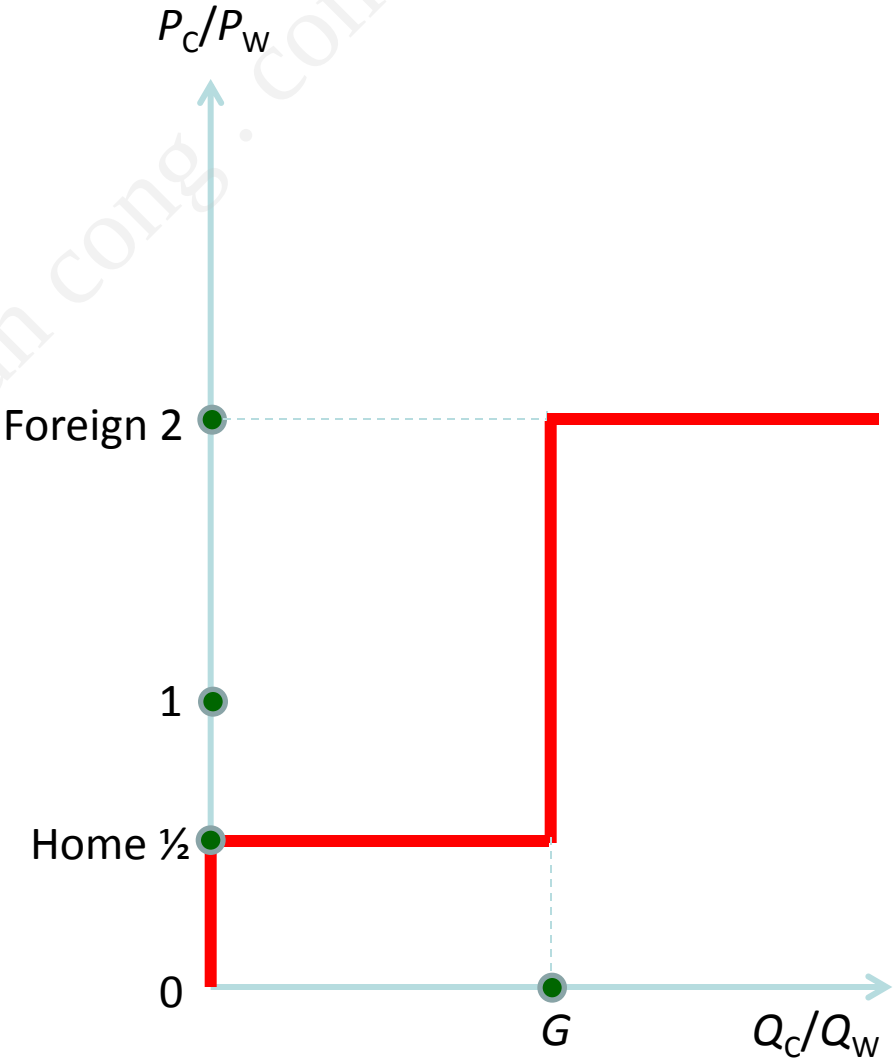
- If $P_C/P_W > C_{CW}$, producers will be specialized in cheese production; no rational producer will make wine
- Similarly, if $P_C/P_W < C_{CW}$, producers will be specialized in wine production
- Therefore, both wine and cheese will be produced only if $P_C/P_W = C_{CW}$.
  - This is the autarky outcome

Opportunity Cost		
	Cheese C_{CW}	Wine C_{WC}
Home	½ gallons of wine	2 pounds of cheese
Foreign	2 gallons of wine	½ pounds of cheese

Example: Specialization ($P_C/P_W > 2$)

- If $P_C/P_W > 2$, both countries specialize in cheese

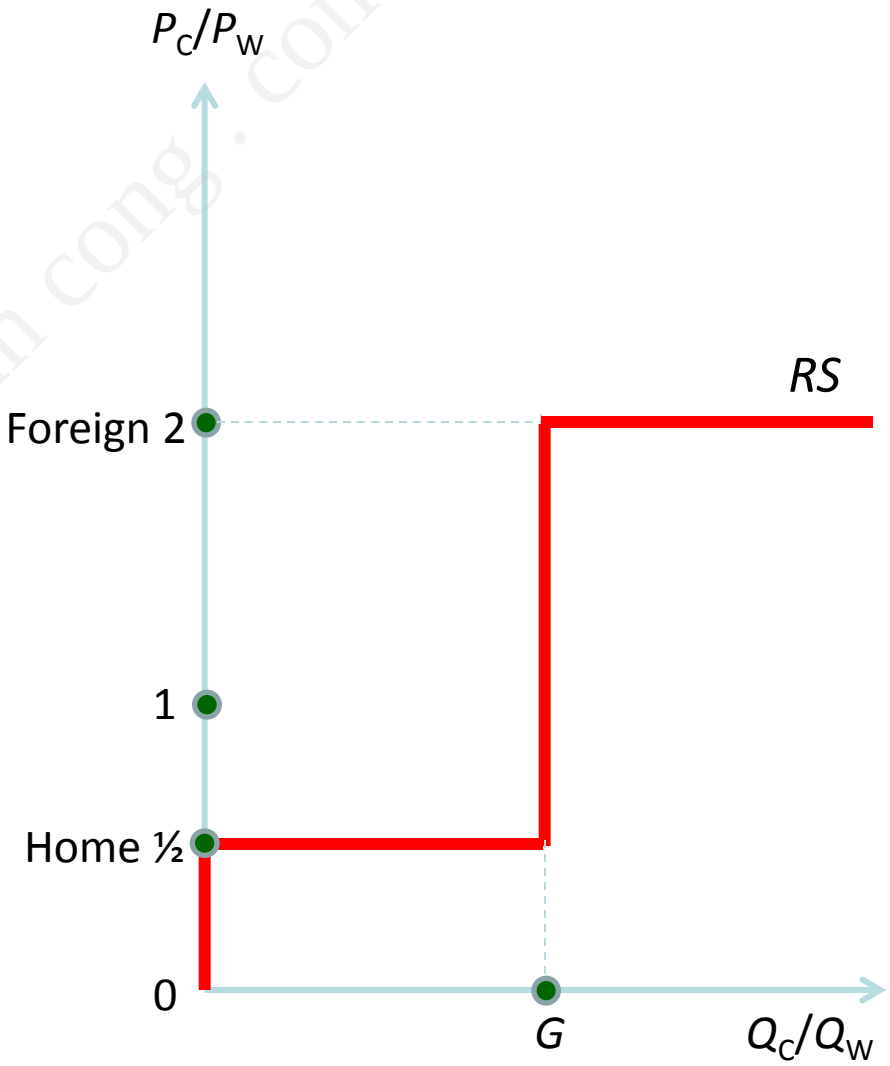
Opportunity Cost		
	Cheese C_{CW}	Wine C_{WC}
Home	½ gallons of wine	2 pounds of cheese
Foreign	2 gallons of wine	½ pounds of cheese



Example: Relative Supply Curve

- This is **the relative supply curve**

Opportunity Cost		
	Cheese C_{CW}	Wine C_{WC}
Home	½ gallons of wine	2 pounds of cheese
Foreign	2 gallons of wine	½ pounds of cheese



The Ricardian Assumptions—Markets

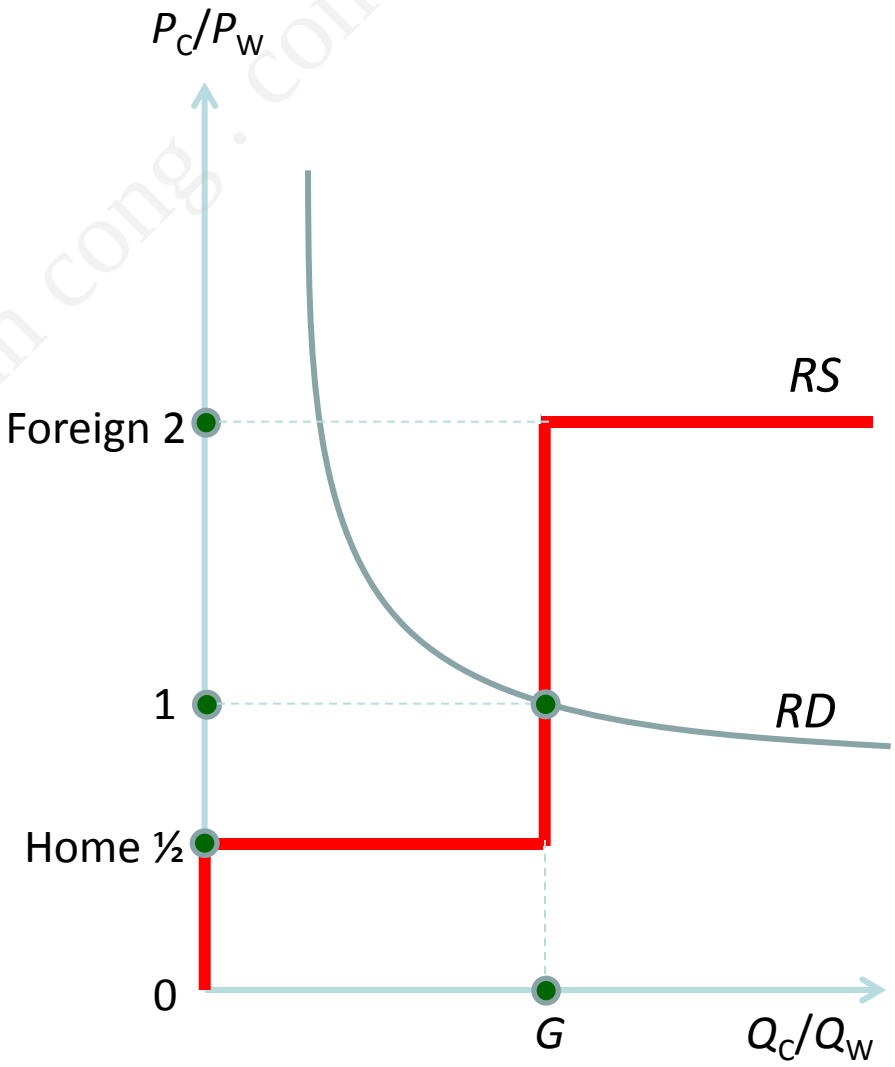
- There is perfect competition in all markets.
  - That is, no buyer or seller of a commodity has the power to affect the price of the commodity by himself.
  - More specifically, the market for a commodity is said to be perfectly competitive if:
    - There are many sellers
    - There are many buyers
    - All sellers sell the exact same product
- Individuals make decisions so as to maximize happiness, whereas
- Firms make decisions so as to maximize profits

The Ricardian Assumptions—Governments

- Governments do not interfere with the smooth functioning of markets; there are no taxes, subsidies, tariffs, quotas, etc.

Example: Free Trade Equilibrium

- The Ricardian theory assumes that the relative price of cheese will ensure the equality of relative demand and relative supply
  - See Figure 3-3 of the textbook

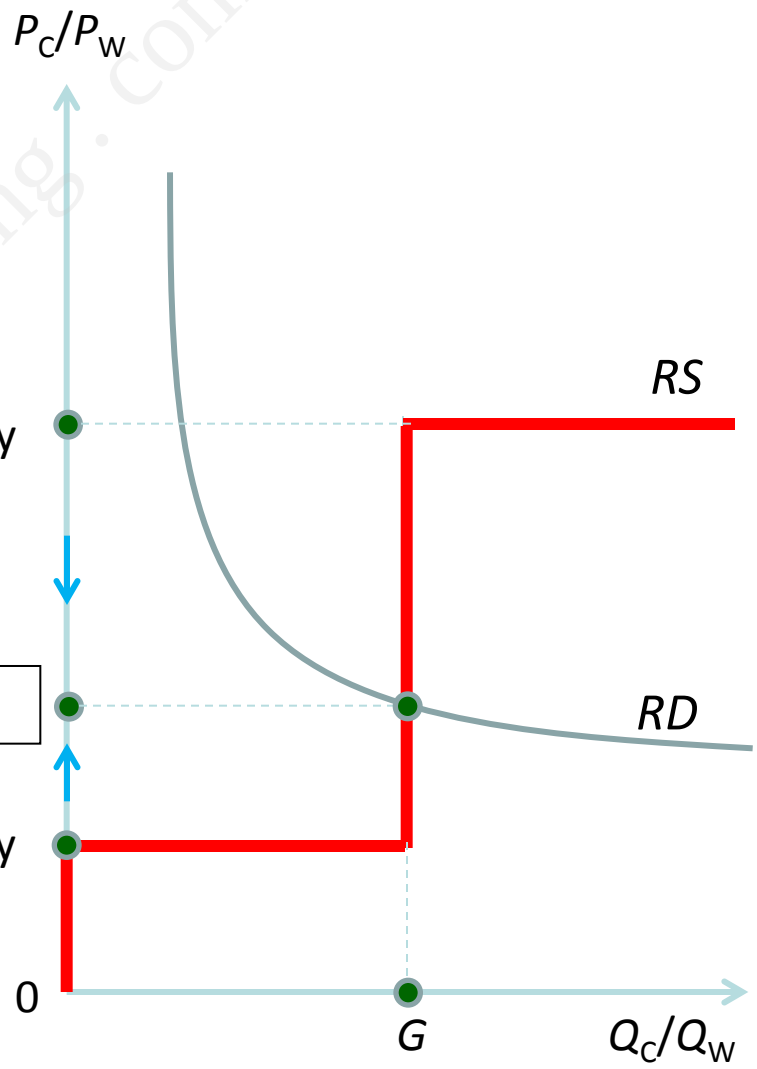


Free Trade Equilibrium

Higher of the two autarky relative prices of cheese = Higher of the two countries' opportunity costs of cheese (C_{CW})

Free Trade Price

Lower of the two autarky relative prices of cheese = Lower of the two countries' opportunity costs of cheese (C_{CW})



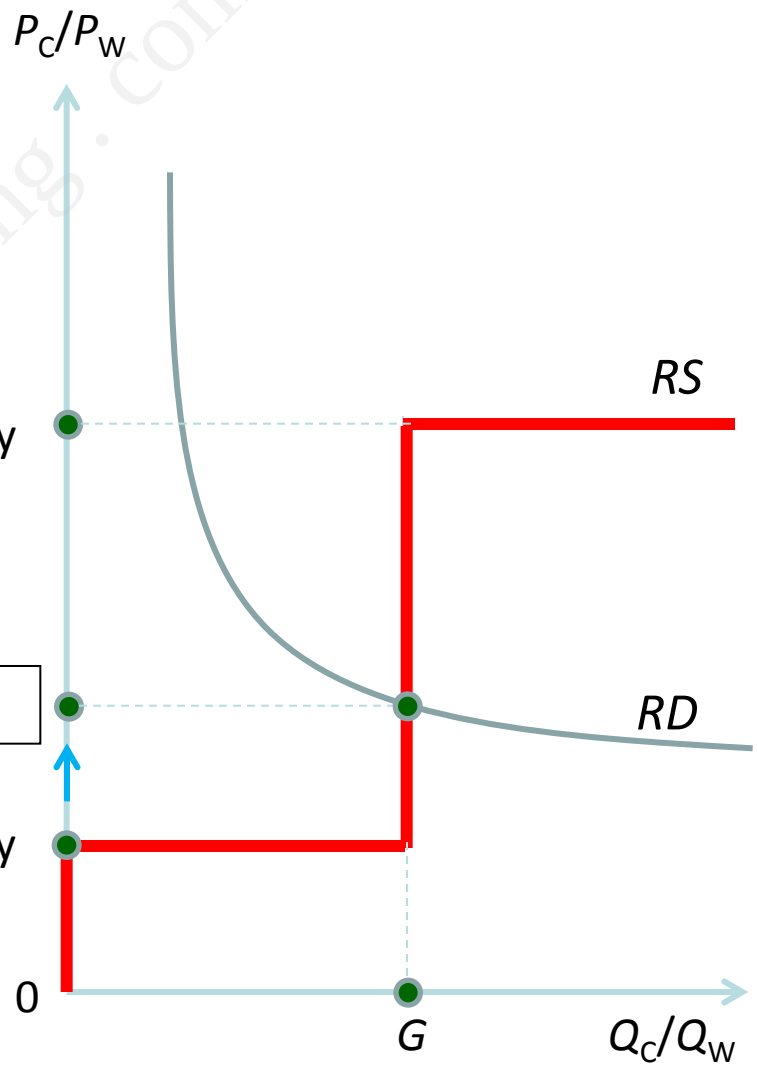
Free Trade Equilibrium

Note that trade *raises* the relative price of cheese in the country that has the *lower* relative price of cheese in autarky

Higher of the two autarky relative prices of cheese = Higher of the two countries' opportunity costs of cheese (C_{CW})

Free Trade Price

Lower of the two autarky relative prices of cheese = Lower of the two countries' opportunity costs of cheese (C_{CW})



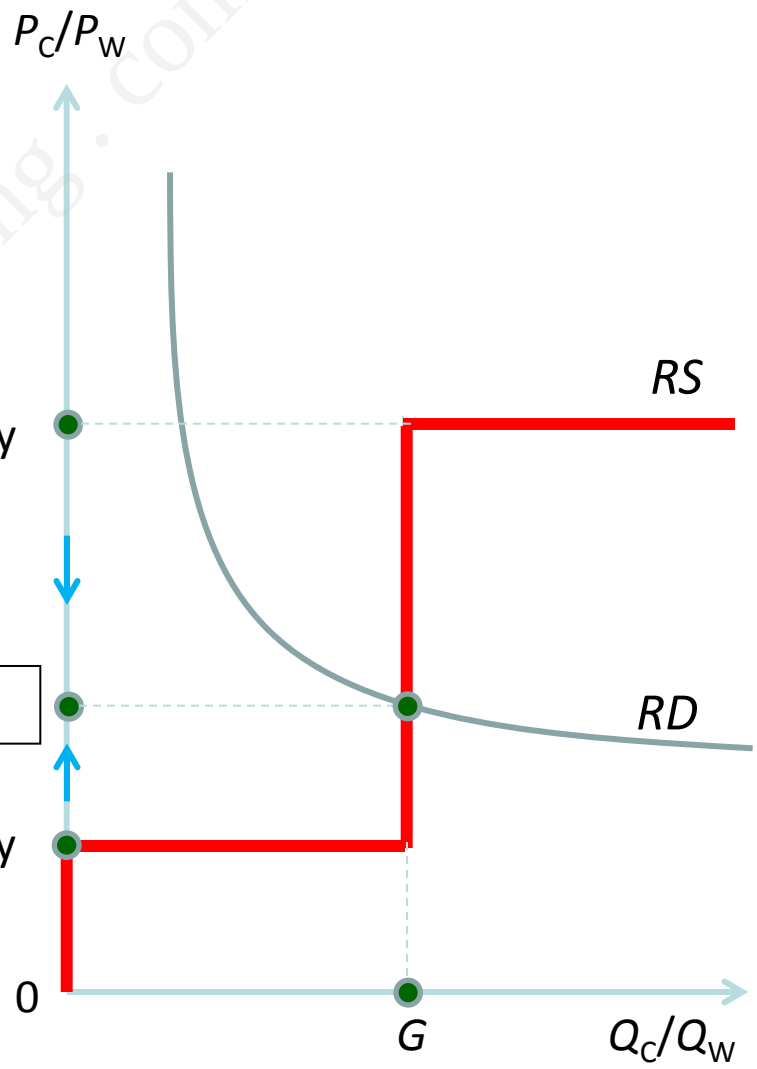
Free Trade Equilibrium

Trade *reduces* the relative price of cheese in the country that has the *higher* relative price of cheese in autarky

Higher of the two autarky relative prices of cheese = Higher of the two countries' opportunity costs of cheese (C_{CW})

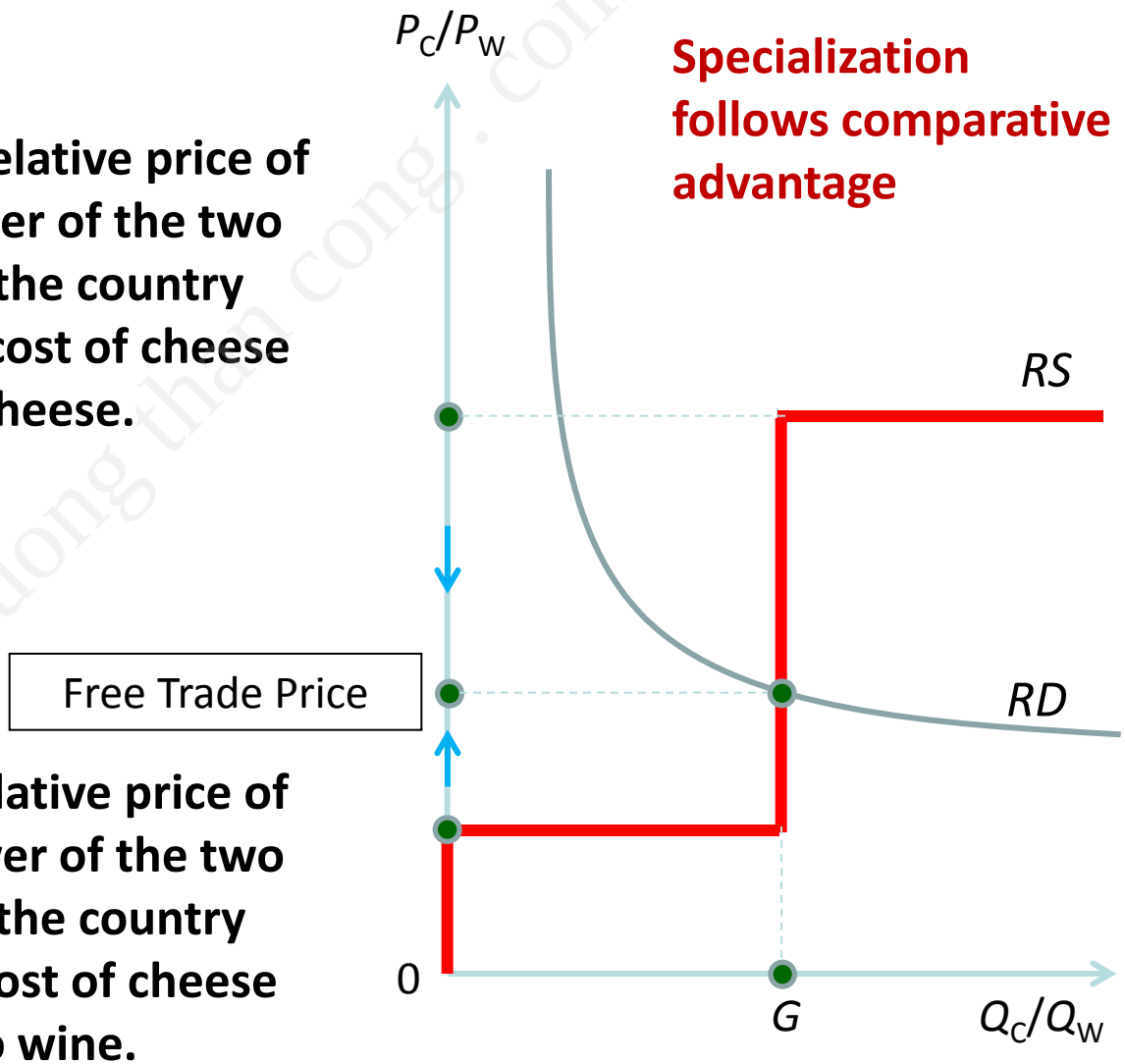
Free Trade Price

Lower of the two autarky relative prices of cheese = Lower of the two countries' opportunity costs of cheese (C_{CW})



Free Trade → Specialization

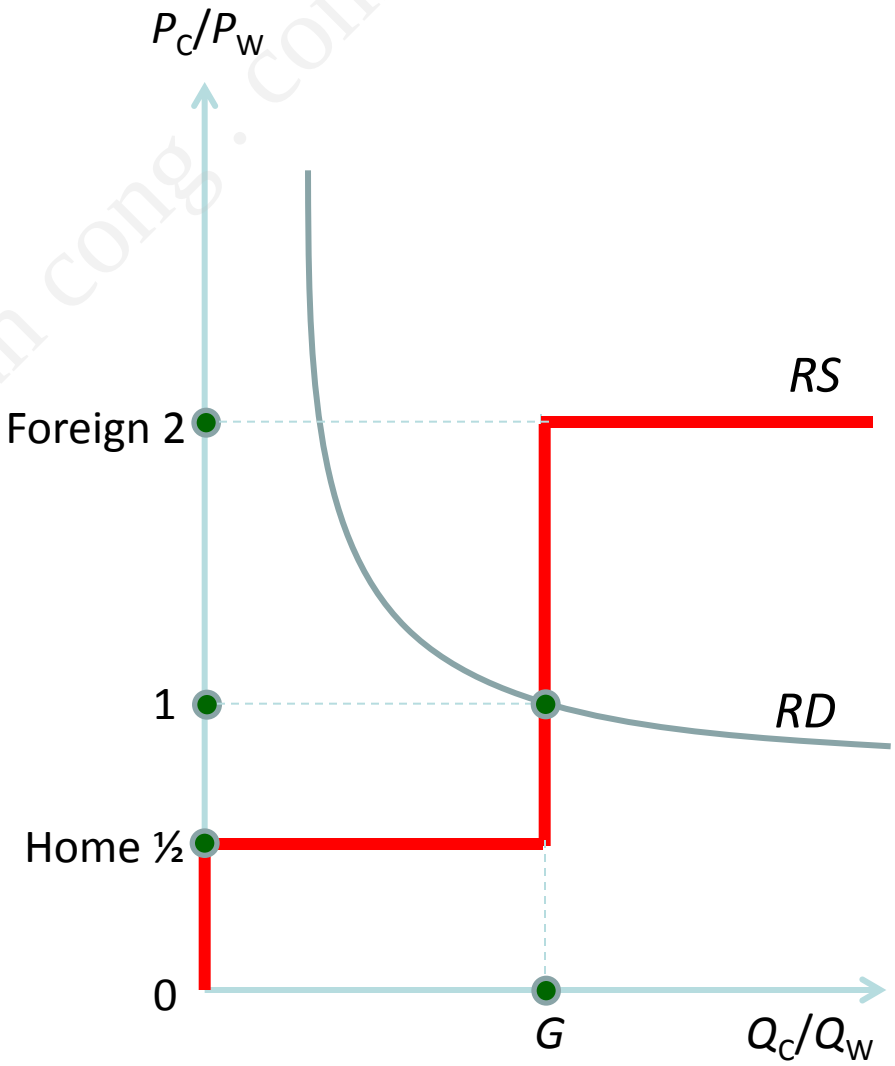
Note that, as the free trade relative price of cheese is lower than the higher of the two opportunity costs of cheese, the country with the higher opportunity cost of cheese will make only wine and no cheese.



Similarly, as the free trade relative price of cheese is higher than the lower of the two opportunity costs of cheese, the country with the lower opportunity cost of cheese will make only cheese and no wine.

Example: Free Trade Equilibrium

- When autarky ends and free trade begins:
  - The relative price of cheese will rise in Home and fall in Foreign
  - **Foreign will specialize in wine production and export wine** to Home
  - **Home will specialize in cheese production and export cheese** to Foreign



Comparative Advantage

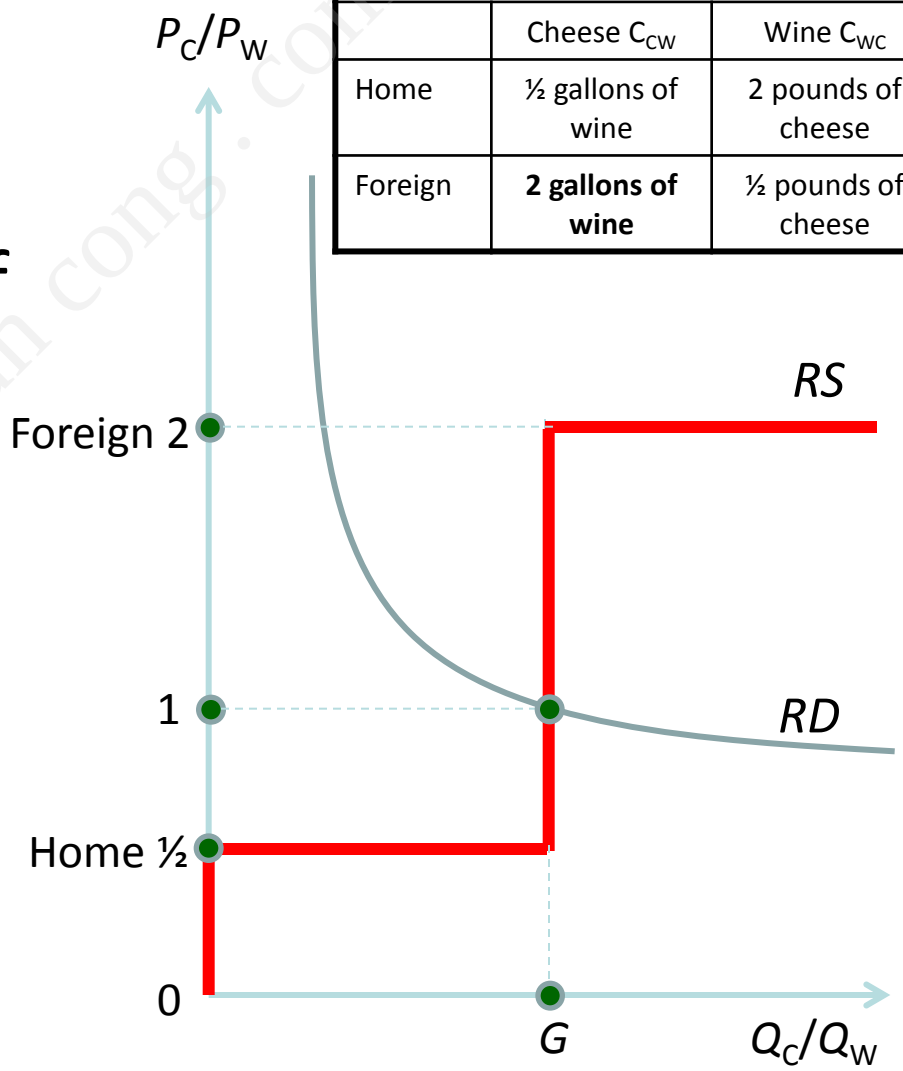
- Each country exports the good that it had been producing at a cheaper relative price in autarky
- Relative Price = Opportunity Cost
- Therefore, each country exports the good for which its opportunity cost is lower
- This is called the Principle of Comparative Advantage

GAINS FROM TRADE

Example: Gains from Trade

- In autarky, Foreign can *make* 1 pound of cheese at a sacrifice of 2 gallons of wine
- But under free trade, it can *import* 1 pound of cheese for 1 gallon of wine

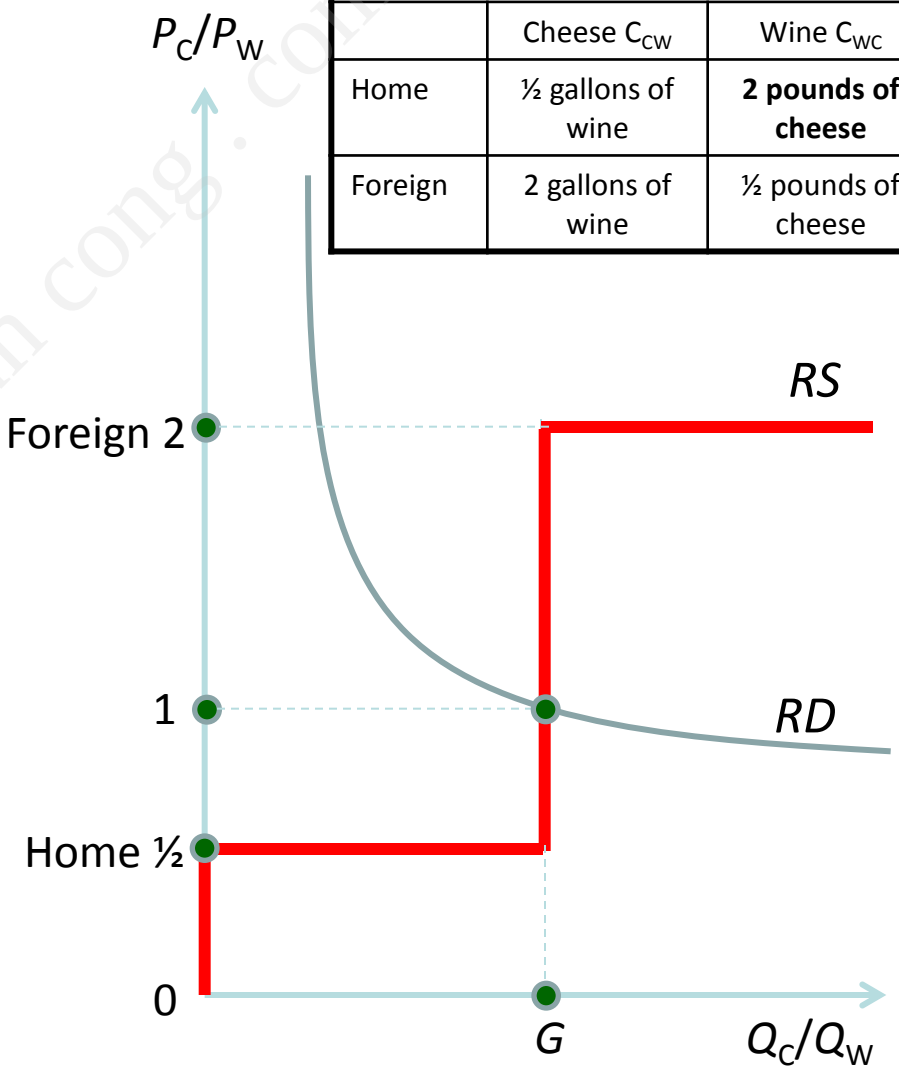
	Opportunity Cost	
	Cheese C_{CW}	Wine C_{WC}
Home	½ gallons of wine	2 pounds of cheese
Foreign	**2 gallons of wine**	½ pounds of cheese



Example: Gains from Trade

- In autarky, Home can *make* 1 gallon of wine at a sacrifice of 2 pounds of cheese
- But under free trade, Home can *import* 1 gallon of wine for 1 pound of cheese

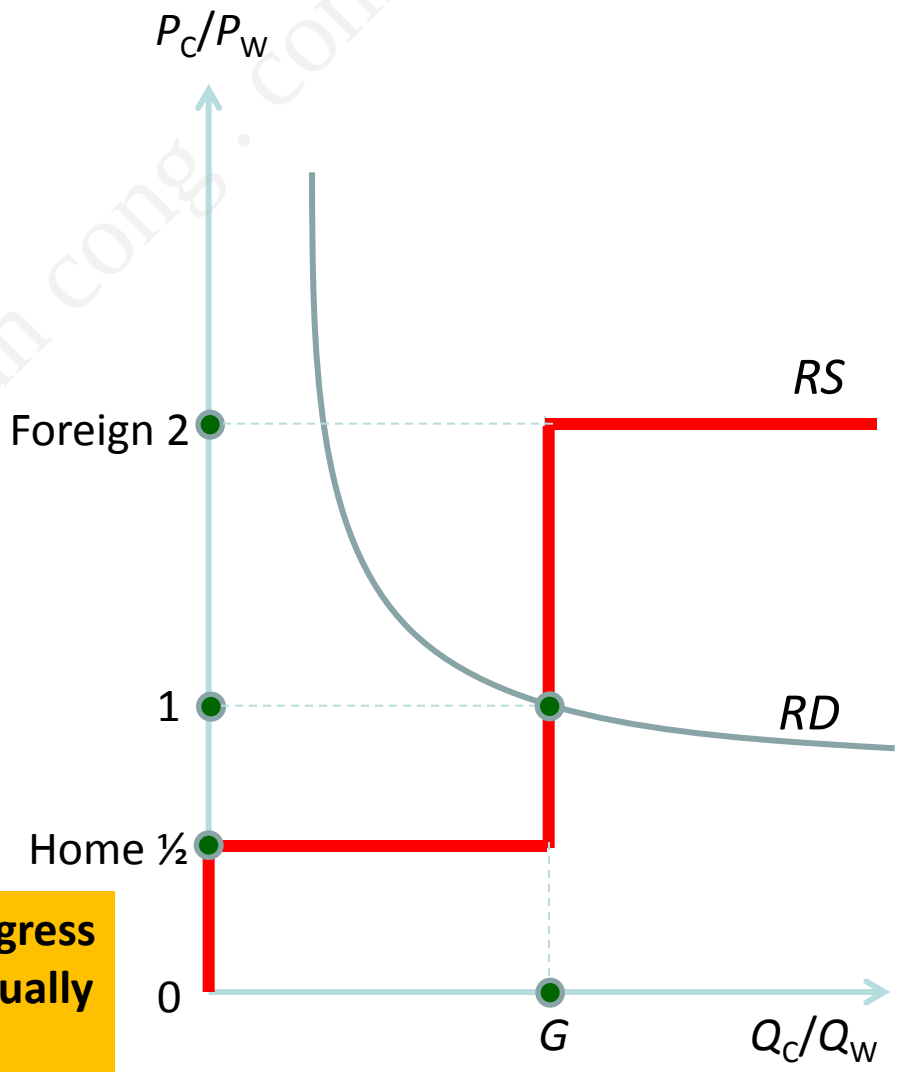
	Opportunity Cost	
	Cheese C_{CW}	Wine C_{WC}
Home	½ gallons of wine	**2 pounds of cheese**
Foreign	2 gallons of wine	½ pounds of cheese



Example: Gains from Trade

Opportunity Cost (Autarky)		
	Cheese C_{CW}	Wine C_{WC}
Home	½ gallons of wine	**2 pounds of cheese**
Foreign	**2 gallons of wine**	½ pounds of cheese

Opportunity Cost (Free Trade)		
	Cheese C_{CW}	Wine C_{WC}
Home	½ gallons of wine	**1 pound of cheese**
Foreign	**1 gallon of wine**	½ pounds of cheese



Globalization is like making technological progress without having to do any of the hard work usually needed for technological progress!

Wage Gains from Trade

- The gains from trade can also be expressed in terms of the wages earned by labor.

No Profits in Ricardo's World!

- In Ricardo's theory, workers have everything they need to produce things.
  - They know the technology that is needed to make things and they possess the ability to work.
- Therefore, in Ricardo's world, all revenues from the sale of produced goods go to workers
- That is, the wage for an hour's work equals the entire output of an hour's work

Gains from trade

- We can show labor's gains from trade by examining how the *relative wage* that labor gets is affected by trade

Relative Wages

- The **relative wage** is the *purchasing power* of the (nominal) dollar wage, *w*.
- Therefore, to see whether labor gains from trade, we need to look at what trade does to the relative wage.
- The relative wage may be measured in units of cheese (or wine) as the amount of cheese (or wine) that may be bought with the (nominal) dollar wage.

Relative Wage—Example

- Suppose the (nominal) wage is 20 Yuan and the (nominal) price of cheese is 5 Yuan.
- Then the relative wage (in units of cheese) is 4 pounds of cheese
- *Formula*: In general, the relative wage in units of a given good is calculated by *dividing* the (nominal) wage by the (nominal) price of the given good.
  - Relative wage = w/P

Unit Labor Requirements and Productivity: How Related?

- In our numerical example:
  - a_{CF} = 6 hours
  - That is, in Foreign, 6 hours of labor are needed to produce 1 pound of cheese
  - Therefore, 1 hour of labor produces 1/6 pounds of cheese
    - That is, the productivity of labor in Foreign is 1/6 pounds of cheese
  - Therefore, the relative wage (in cheese) of a worker in Foreign making cheese is 1/6 pounds of cheese

Relative Wages in Autarky

- Note that the autarky relative wage in units of a commodity is the reciprocal of the unit labor requirement in the production of that commodity
- Therefore, relative wage = productivity

Autarky Relative Wages		
	In units of Cheese	In units of Wine
Home	$\mathbf{1/a_{CH}}$	$\mathbf{1/a_{WH}}$
Foreign	$\mathbf{1/a_{CF}}$	$\mathbf{1/a_{WF}}$

Autarky Real Wages and Productivity

Unit Labor requirements		
	Cheese	Wine
Home	1 hour per pound	2 hours per gallon
Foreign	6 hours per pound	3 hours per gallon

Relative Wage (In units of each commodity)		
	Cheese	Wine
Home	1 pound of Cheese	½ gallon of Wine
Foreign	1/6 pound of Cheese	1/3 gallon of Wine

Labor Productivity (In units of each commodity)		
	Cheese	Wine
Home	1 pound of Cheese	½ gallon of Wine
Foreign	1/6 pound of Cheese	1/3 gallon of Wine

Note that the relative wage equals productivity. This idea is part of the Neo-Classical Theory of Income Distribution.

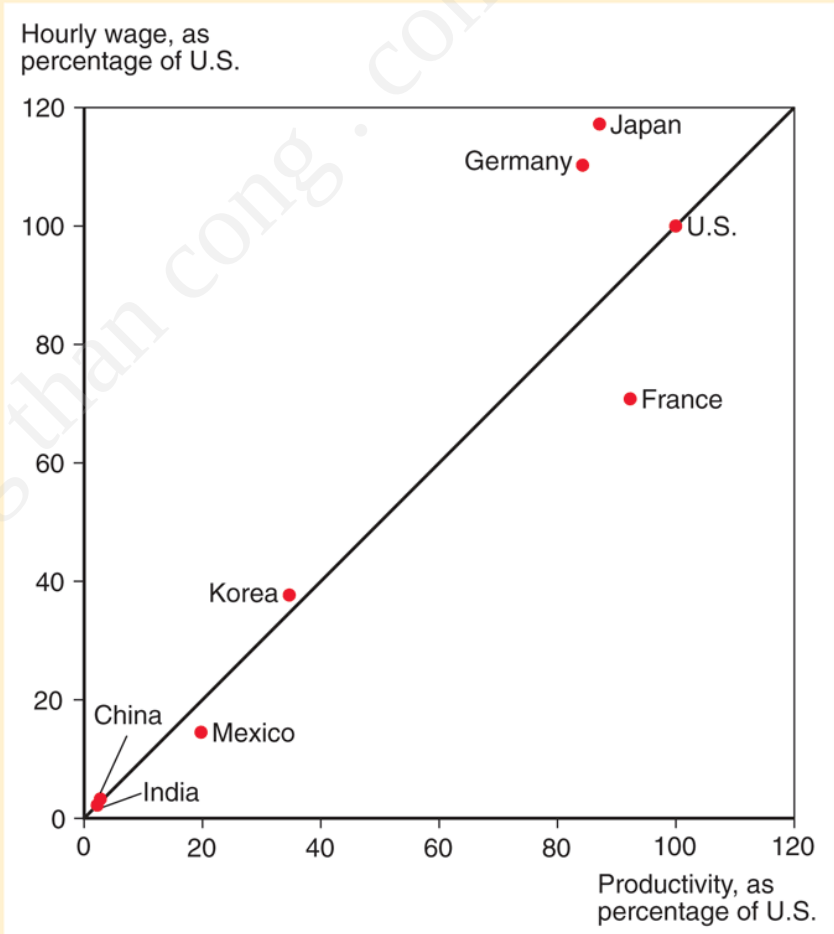
What happens to relative wages when autarky ends and free trade begins?

Do Wages Reflect Productivity?

Productivity and Wages

A country's wage rate is roughly proportional to the country's productivity.

Source: International Labor Organization, World Bank, Bureau of Labor Statistics, and Orley Ashenfelter and Stepan Jurajda, "Cross-country Comparisons of Wage Rates," working paper, Princeton University.



Do Wages Reflect Productivity? (cont.)

- Other evidence shows that wages rise as productivity rises.
  - In 2000, South Korea's labor productivity was 35% of the US level and its average wages were about 38% of US average wages.
  - After the Korean War, South Korea was one of the poorest countries in the world, and its labor productivity was very low. In 1975, average wages in South Korea were still only 5% of US average wages.

Relative Wages—Free Trade

- We saw earlier that if a good is produced, then relative wage equals productivity: $w/P = 1/a$
- As Home produces Cheese both in autarky and free trade, the relative wage in units of cheese in Home will be the same in autarky and free trade
- Similarly, as Foreign produces Wine both in autarky and free trade, the relative wage in units of Wine in Foreign will be the same in autarky and free trade

Relative Wages: Autarky and Trade

Unit Labor requirements		
	Cheese	Wine
Home	1 hour per pound	2 hours per gallon
Foreign	6 hours per pound	3 hours per gallon

Free Trade Relative Wage		
	Cheese	Wine
Home	1 pound of Cheese	?
Foreign	?	1/3 gallon of Wine

The relative wage in units of the *exported* good does *not* change!!!

Labor Productivity		
	Cheese	Wine
Home	1 pound of Cheese	½ gallon of Wine
Foreign	1/6 pound of Cheese	1/3 gallon of Wine

Autarky Relative Wage		
	Cheese	Wine
Home	1 pound of Cheese	½ gallon of Wine
Foreign	1/6 pound of Cheese	1/3 gallon of Wine

Relative Wages: Autarky and Trade

- The remaining mystery is about the relative wage in units of Wine in Home ($w_H/P_{W,H}$) and the real wage in units of Cheese in Foreign ($w_F/P_{C,F}$)
- That is, for each country, the relative wage in units of the *imported* good is still unclear

Relative Wages—Free Trade

$$\frac{w_{Home}}{P^{Wine}_{Home}} = \frac{w_{Home}}{P^{Cheese}_{Home}} \times \frac{P^{Cheese}_{Home}}{P^{Wine}_{Home}}$$

3. Therefore, increases when trade begins

1. Unaffected by trade

2. Increases when trade begins

Relative Wages—Free Trade

$$\frac{w_{Foreign}}{P^{Cheese}_{Foreign}} = \frac{w_{Foreign}}{P^{Wine}_{Foreign}} \times \frac{P^{Wine}_{Foreign}}{P^{Cheese}_{Foreign}}$$

3. Therefore, increases when trade begins

1. Unaffected by trade

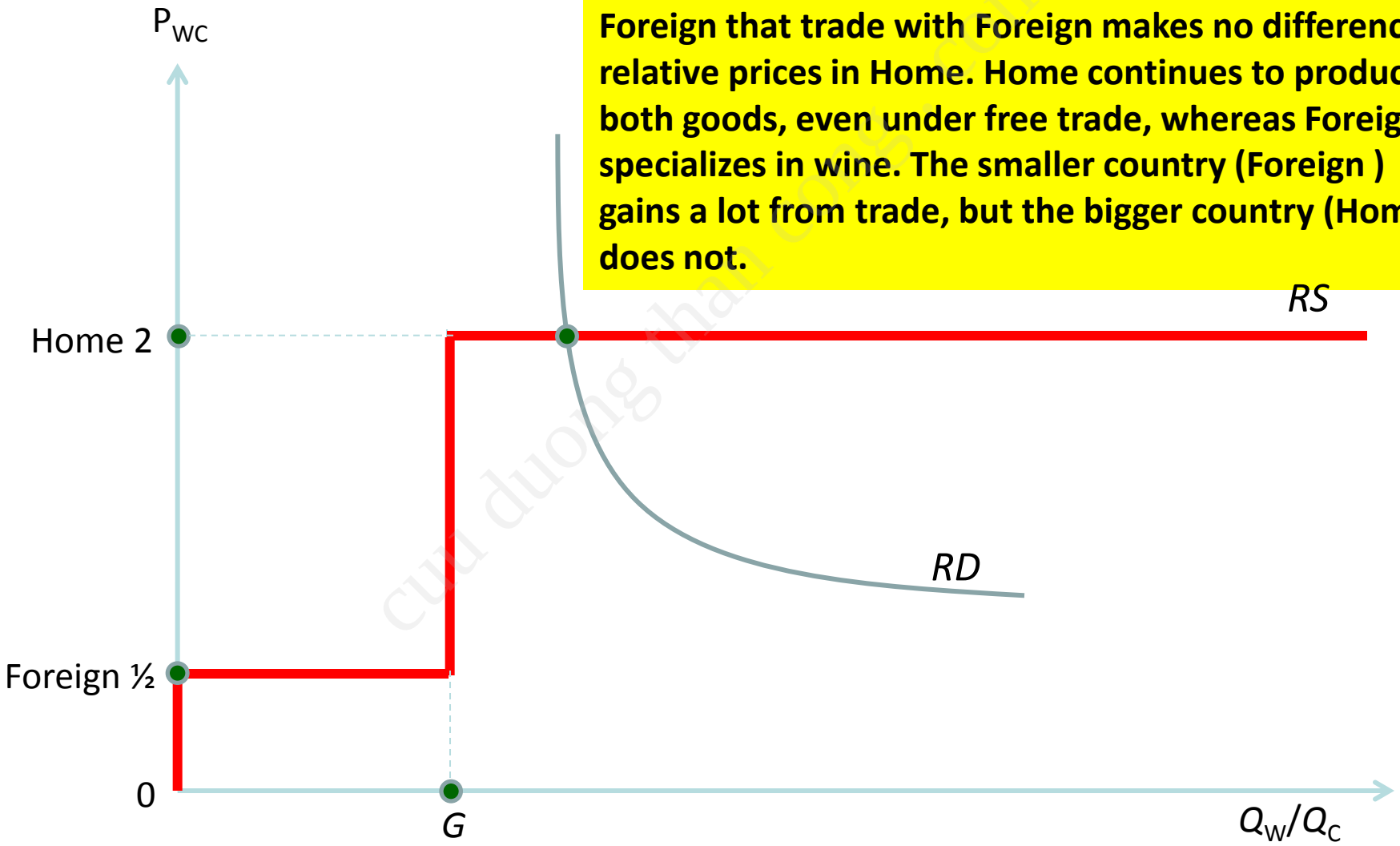
2. Increases when trade begins

Relative Wages—Autarky and Free Trade

- The relative wage in units of the *exported* good *does not change*
- The relative wage in units of the *imported* good *increases*, reflecting the gains from trade
- Labor is better off.
  - And the gains come from the increases in purchasing power due to the availability of cheaper imports

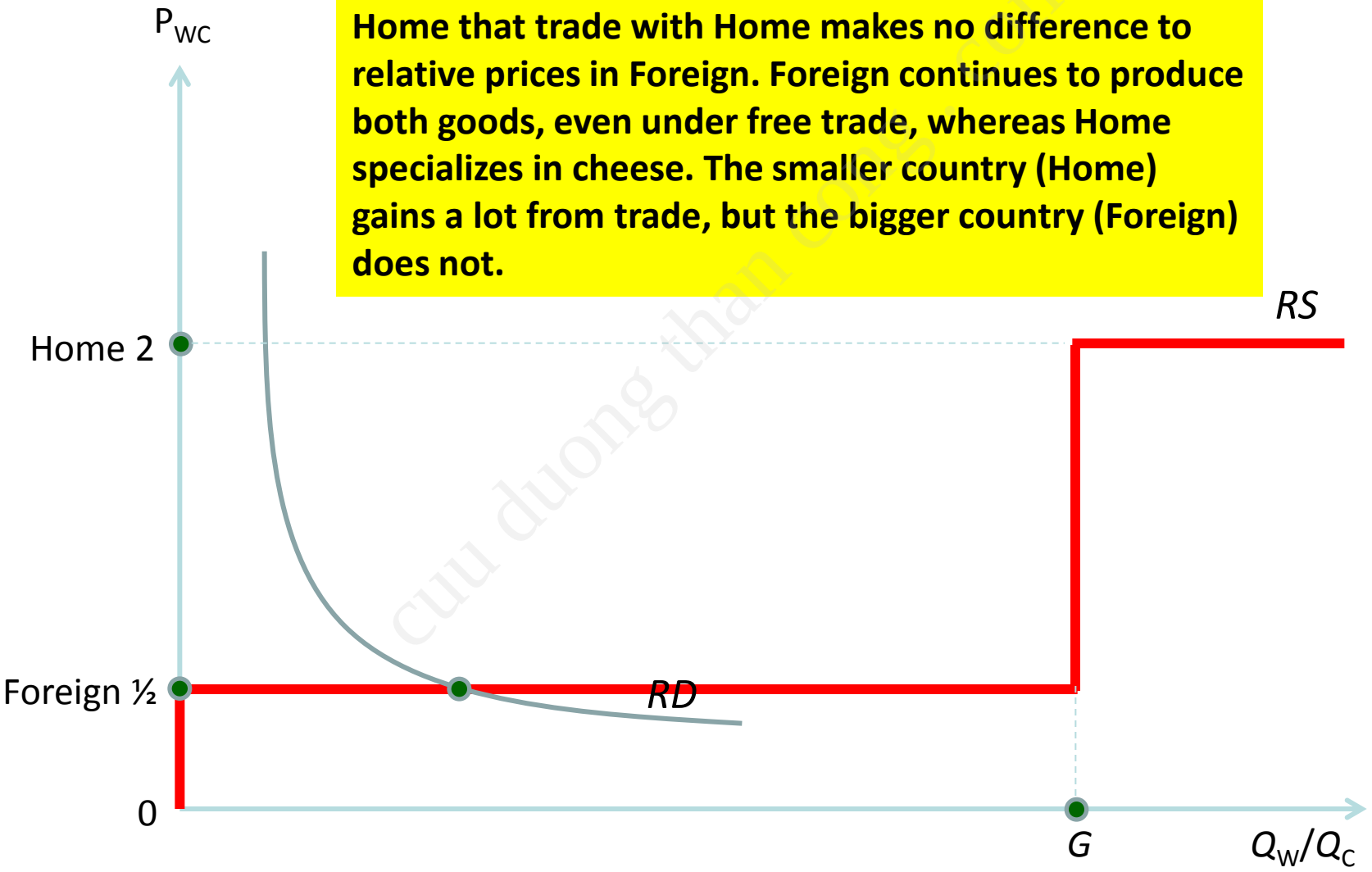
Exceptions: Free Trade Equilibrium

In this unusual case, Home is so large compared to Foreign that trade with Foreign makes no difference to relative prices in Home. Home continues to produce both goods, even under free trade, whereas Foreign specializes in wine. The smaller country (Foreign) gains a lot from trade, but the bigger country (Home) does not.



Exceptions: Free Trade Equilibrium

In this unusual case, Foreign is so large compared to Home that trade with Home makes no difference to relative prices in Foreign. Foreign continues to produce both goods, even under free trade, whereas Home specializes in cheese. The smaller country (Home) gains a lot from trade, but the bigger country (Foreign) does not.



Ricardian Model: Main Lessons

- **Trade occurs because technology varies from country to country**
- **Even backward countries—such as Foreign in our numerical example—can gain from trade with advanced countries—such as Home**
- **Advanced countries can gain from trade even if their workers have to compete with "cheap labor" countries**

Misconceptions About Comparative Advantage

1. Free trade is beneficial only if a country is more productive than foreign countries.
   - But even an unproductive country benefits from free trade by avoiding the high costs for goods that it would otherwise have to produce domestically.
   - High costs derive from inefficient use of resources.
   - The benefits of free trade do not depend on absolute advantage, rather they depend on comparative advantage: specializing in industries that use resources most efficiently.

Misconceptions About Comparative Advantage (cont.)

2. Free trade with countries that pay low wages hurts high wage countries.
   - While trade may reduce wages for *some* workers, thereby affecting the distribution of income within a country, trade benefits consumers and other workers.
   - Consumers benefit because they can purchase goods more cheaply (more wine in exchange for cheese).
   - Producers/workers benefit by earning a higher income (by using resources more efficiently and through higher prices/wages).

Misconceptions About Comparative Advantage (cont.)

3. Free trade exploits less productive countries.
   - While labor standards in some countries are less than exemplary compared to Western standards, they are so with or without trade.
   - Are high wages and safe labor practices alternatives to trade? Deeper poverty and exploitation (e.g., involuntary prostitution) may result without export production.
   - Consumers benefit from free trade by having access to cheaply (efficiently) produced goods.
   - Producers/workers benefit from having higher profits/wages—higher compared to the alternative.

Transportation Costs and Non-traded Goods

- The Ricardian model predicts that countries should completely specialize in production.
- But this rarely happens for primarily 3 reasons:
  1. More than one factor of production reduces the tendency of specialization (chapter 4)
  2. Protectionism (chapters 8–11)
  3. Transportation costs reduce or prevent trade, which may cause each country to produce the same good or service

Transportation Costs and Non-traded Goods (cont.)

- Non-traded goods and services (e.g., haircuts and auto repairs) exist due to high transportation costs.
  - Countries tend to spend a large fraction of national income on non-traded goods and services.
  - This fact has implications for the gravity model and for models that consider how income transfers across countries affect trade.

Empirical Evidence

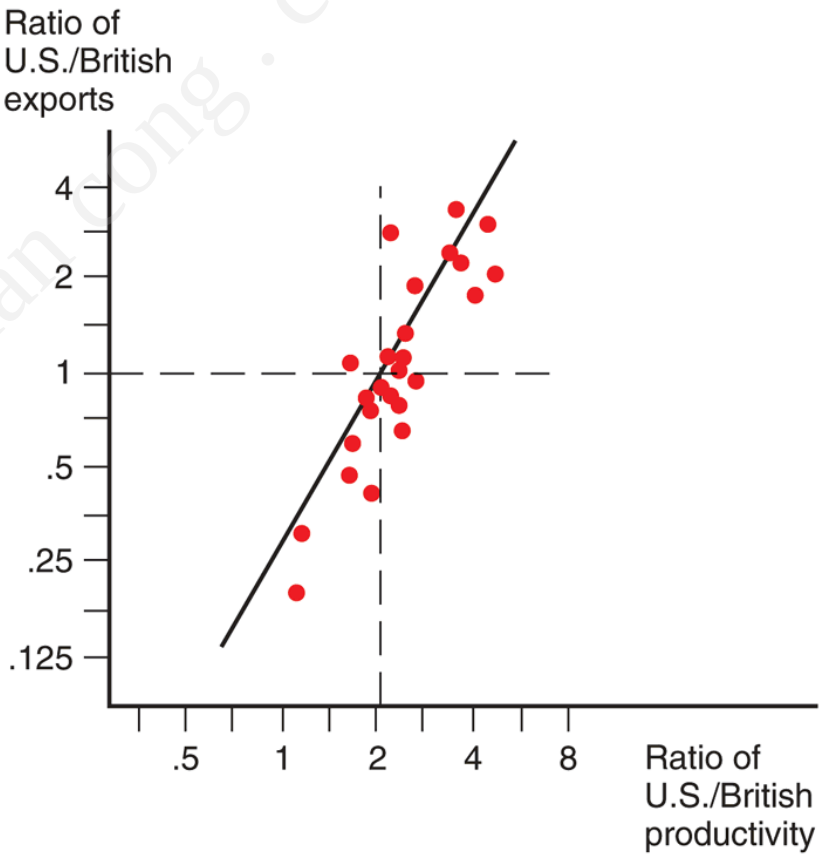
- Do countries export those goods in which their productivity is relatively high?
- The ratio of US to British exports in 1951 compared to the ratio of US to British labor productivity in 26 manufacturing industries suggests yes.
- At this time the US had an absolute advantage in *all* 26 industries, yet the ratio of exports was low in the least productive sectors of the US.

Empirical Evidence (cont.)

Figure 3-6

Productivity and Exports

A comparative study showed that U.S. exports were high relative to British exports in industries in which the United States had high relative labor productivity. Each dot represents a different industry.



Exercise: Autarky Relative Prices

Unit Labor requirements		
	Cheese	Wine
Home	4 hour per pound	1 hours per gallon
Foreign	2 hours per pound	6 hours per gallon

Relative Price (In units of the *other* good)		
	Cheese	Wine
Home		
Foreign		

Exercise: Autarky Relative Prices

Unit Labor requirements		
	Cheese	Wine
Home	4 hour per pound	1 hours per gallon
Foreign	2 hours per pound	6 hours per gallon

Relative Price (In units of the *other* good)		
	Cheese	Wine
Home	4 gallons of Wine	
Foreign		

Exercise: Autarky Relative Prices

Unit Labor requirements		
	Cheese	Wine
Home	4 hour per pound	1 hours per gallon
Foreign	2 hours per pound	6 hours per gallon

Relative Price (In units of the *other* good)		
	Cheese	Wine
Home	4 gallons of Wine	¼ pounds of Cheese
Foreign		

Exercise: Autarky Relative Prices

Unit Labor requirements		
	Cheese	Wine
Home	4 hour per pound	1 hours per gallon
Foreign	2 hours per pound	6 hours per gallon

Relative Price (In units of the *other* good)		
	Cheese	Wine
Home	4 gallons of Wine	¼ pounds of Cheese
Foreign	1/3 gallons of Wine	

Exercise: Autarky Relative Prices

Unit Labor requirements		
	Cheese	Wine
Home	4 hour per pound	1 hours per gallon
Foreign	2 hours per pound	6 hours per gallon

Relative Price (In units of the *other* good)		
	Cheese	Wine
Home	4 gallons of Wine	¼ pounds of Cheese
Foreign	1/3 gallons of Wine	3 pounds of Cheese

Q: Which country will export Cheese?

A: Foreign

Exercise: Autarky Relative Prices

Unit Labor requirements		
	Cheese	Wine
Home	4 hour per pound	1 hours per gallon
Foreign	2 hours per pound	6 hours per gallon

Relative Price (In units of the *other* good)		
	Cheese	Wine
Home	4 gallons of Wine	**¼ pounds of Cheese**
Foreign	**1/3 gallons of Wine**	3 pounds of Cheese

Q: Which country will export Cheese?

A: Foreign

Assume that in free trade 1 pound of cheese trades for 2 gallons of wine, and, equivalently, 1 gallon of wine trades for ½ pounds of cheese

Exercise: Autarky Relative Wages

Unit Labor requirements		
	Cheese	Wine
Home	4 hour per pound	1 hours per gallon
Foreign	2 hours per pound	6 hours per gallon

Relative Wages (In units of the *other* good)		
	Cheese	Wine
Home		
Foreign		

Exercise: Autarky Relative Wages

Unit Labor requirements		
	Cheese	Wine
Home	4 hour per pound	1 hours per gallon
Foreign	2 hours per pound	6 hours per gallon

Relative Wages (In units of the *other* good)		
	Cheese	Wine
Home	¼ pounds of cheese	
Foreign		

Exercise: Autarky Relative Wages

Unit Labor requirements		
	Cheese	Wine
Home	4 hour per pound	1 hours per gallon
Foreign	2 hours per pound	6 hours per gallon

Relative Wages (In units of the *other* good)		
	Cheese	Wine
Home	¼ pounds of cheese	
Foreign	½ pounds of cheese	

Exercise: Autarky Relative Wages

Unit Labor requirements		
	Cheese	Wine
Home	4 hour per pound	1 hours per gallon
Foreign	2 hours per pound	6 hours per gallon

Relative Wages (In units of the *other* good)		
	Cheese	Wine
Home	¼ pounds of cheese	1 gallon of wine
Foreign	½ pounds of cheese	1/6 gallons of wine

Exercise: Free Trade Relative Wages

Unit Labor requirements		
	Cheese	Wine
Home	4 hour per pound	**1 hours per gallon**
Foreign	**2 hours per pound**	6 hours per gallon

Relative Wages (In units of the *other* good)		
	Cheese	Wine
Home		
Foreign		

Assume that in free trade 1 pound of cheese trades for 2 gallons of wine, and, equivalently, 1 gallon of wine trades for ½ pounds of cheese

Exercise: Free Trade Relative Wages

Unit Labor requirements		
	Cheese	Wine
Home	4 hour per pound	**1 hours per gallon**
Foreign	**2 hours per pound**	6 hours per gallon

Relative Wages (In units of the *other* good)		
	Cheese	Wine
Home		1 gallon of wine
Foreign	½ pounds of cheese	

Assume that in free trade 1 pound of cheese trades for 2 gallons of wine, and, equivalently, 1 gallon of wine trades for ½ pounds of cheese

Exercise: Free Trade Relative Wages

Unit Labor requirements		
	Cheese	Wine
Home	4 hour per pound	**1 hours per gallon**
Foreign	**2 hours per pound**	6 hours per gallon

Relative Wages (In units of the *other* good)		
	Cheese	Wine
Home	½ pounds of cheese	1 gallon of wine
Foreign	½ pounds of cheese	2 gallons of wine

Assume that in free trade 1 pound of cheese trades for 2 gallons of wine, and, equivalently, 1 gallon of wine trades for ½ pounds of cheese

Exercise: What does Free Trade do to Relative Wages

Unit Labor requirements		
	Cheese	Wine
Home	4 hour per pound	**1 hours per gallon**
Foreign	**2 hours per pound**	6 hours per gallon

Free Trade Relative Wages (In units of the *other* good)		
	Cheese	Wine
Home	½ pounds of cheese	1 gallon of wine
Foreign	½ pounds of cheese	1 gallon of wine

Assume that in free trade 1 pound of cheese trades for 2 gallons of wine, and, equivalently, 1 gallon of wine trades for ½ pounds of cheese

Autarky Relative Wages (In units of the *other* good)		
	Cheese	Wine
Home	¼ pounds of cheese	1 gallon of wine
Foreign	½ pounds of cheese	1/6 gallons of wine

We’re Done!

- Any questions or comments?