



對外經濟貿易大學
UNIVERSITY OF INTERNATIONAL BUSINESS AND ECONOMICS

Part II

Core Theory: Classic

International Trade Theories

Preview

- Chapter 1

Mercantilism and the Transition to Ricardo
Theory of International Trade

- Chapter 2

Comparative Advantage

- Chapter 3

Extensions and Tests of the Classical Model
of Trade

Chapter 1

- Mercantilism and the Transition to Ricardo Theory of International Trade

Mercantilism

■ Review

- It can not be classified as a formal school of thought, rather a collection of similar attitudes toward economic thinking and international trade.
- Central to mercantilist thinking was the view that national wealth was reflected not by its productive capacity, but in a country's holdings of precious metals.

Mercantilism

- **To accumulate wealth, the country should maintain a trade surplus.**
- **Trade policies should encourage exports and restrict imports.**
- **The whole doctrine aims at maximizing the trade surplus contradicting's profit maximizing behavior, or the invisible hand theory.**

Mercantilism

- **Trade issues related to China: low labor costs, subsidies, state companies.**
- **Subsidies to education has been ignored.**
- **Should China maintain a large population?**

Mercantilism

Challenge to Mercantilism:

- Price-specie-flow mechanism;
- Surplus can lead either appreciation under flexible exchange rate or inflation under fixed exchange rate.

Mercantilism

- How do we understand China's trade surplus?
- Will specie-flow mechanism work?

Mercantilism

- **Market system and Smith-a another setback of Mercantilists**
- Adam Smith argued about (1) market self-adjustment mechanism, (2) the limited role of the government in the market, (3) specialization and (4) gains from trade in his book *The Wealth of Nations*.
- Mainly he wanted to explain where a nation's wealth comes.

Mercantilism

- He showed that trade is beneficial to both parties and the whole world.
- When did the Chinese get to know his argument?
- How long has it taken us to accept this argument?
- Or we simply discredit it?

Chinese Approach to Opening Up

- In 1757, Emperor Qiang Long ordered to close all the Chinese seaports to foreign traders.
- The only one seaport that was left open to foreign traders was the port of Canton (Guangzhou) in south China.

Chinese Approach to Opening Up

- Foreign traders were allowed to trade only in the summer and the fall only with state-owned companies appointed by the government.
- This was the time when Great Britain was undergoing the industrial revolution.

Chinese Approach to Opening Up

- In 1792 the British King George III sent his special envoy to China to request to open up the domestic market.
- Emperor Qiang Long refused the request by saying that trade was beneficial unilaterally to Britain, but to China.

Chinese Approach to Opening Up

- Ironically, in 1776 (17 years ago), Adam Smith published his great book "*The Wealth of Nations*" arguing that trade was mutually beneficial.
- The book basically explained where the wealth of a nation had come.

Chinese Approach to Opening Up

- The example shows that the Chinese leaders had lagged behind in their knowledge and thinking about the world.

Chinese Approach to Opening Up

- China was forced to open up by the western powers after the Opium War in 1840-1842.
- In this early stage of the opening up, the emphasis was on learning the manufacturing skills from the west while maintaining the traditional system unchanged.

Chinese Approach to Opening Up

- Or to incorporate the western technology and manufacturing know-how onto the unchanged Chinese system.

Chinese Approach to Opening Up

- **In the midst of debates, the main stream of thinking was to combine the western technology with the Chinese tradition.**

Chinese Approach to Opening Up

- **In 1895, the Chinese navy was totally destroyed in a war with Japan.**
- **This had shocked the Chinese as Japan historically had been a student of China .**
- **As a consequence, reform accelerated.**

Chinese Approach to Opening Up

- **Debates again heated up with accelerated reform.**
- **Westernization was advocated by some extremist intellectuals.**

Chinese Approach to Opening Up

- **Backed by the young Emperor Guang Xu, these intellectuals adopted a western-style reform to establish a constitutional monarchy.**
- **The reform was short-lived (100 days) and cracked down by Emperor Dowager (1896).**

Chinese Approach to Opening Up

- **The intellectuals involved in the reform were either arrested or expelled.**
- **The young Emperor was put under house arrest in the Summer Palace and one of his favored concubines committed suicide in a well in the Forbidden City.**

Chinese Approach to Opening Up

- **During this period, the more acceptable solution was proposed by Zhang Zhidong.**
- **His view was that “the Chinese was the backbone (basis) while the western were to serve”.**

Chinese Approach to Opening Up

- **In 1900, the eight powers including Britain, Russia, the US, Germany, France, Japan, Italy, and Austria-Hungary occupied Tianjin first and then stormed Beijing.**
- **The Chinese government was forced to surrender.**

Chinese Approach to Opening Up

- **The invasion had increased the domestic crisis. The reform pace became faster.**
- **The pressure for adopting western constitutional reform mounted up.**
- **In 1906, the Qing government agreed to a constitutional reform.**
- **However, it was too late as Qing Dynasty was overthrown by the nationalists revolution.**

Chinese Approach to Opening Up

- **In spite of this, the reform momentum trend continued until the first world war.**

Chinese Approach to Opening Up

- **In 1911, the Qing Dynasty was overthrown by the nationalist revolution led by Sun Yet-sun.**
- **Sun Yet-sun's solution was to maintain an open and liberal attitudes toward western civilization, but against full westernization.**

Chinese Approach to Opening Up

- His goal was to build “a capitalist economy with Chinese characteristics”.
- Is it similar to our goal to build “a socialist market economy with Chinese characteristics?”
- The brutality of the first world war shocked the Chinese. They became more reluctant to learn from the west.

Chinese Approach to Opening Up

- **With the success of the Soviet revolution, the Chinese saw a new hope.**
- **China started to move toward to Russia until the break-up of the relations in the late 1950s.**

Chinese Approach to Opening Up

- **Between the late 1950s and 1979, China was among the most isolated economies in the world.**
- **After the reform, debates again heated up.**
- **Different terms have been used.**
- **Capitalist v.s socialist;**

Chinese Approach to Opening Up

- **Planning v.s market;**
- **Western v.s Chinese**
- **Deng Xiaoping basically adopted a middle of the road approach.**
- **He talked about socialism with Chinese characteristics.**

Chinese Approach to Opening Up

- **The above history shows that after the Opium war in 1840, China embarked on a long journey to open up to the outside world.**
- **The entire process was characterized by repeated setbacks and endless debates.**

Chinese Approach to Opening Up

- **Central to these debates was the question of the relation between Chinese and the western.**
- **We may find that a stable approach to opening up has prevailed throughout modern Chinese history.**

Chinese Approach to Opening Up

- **While, at different time periods, the approach may have a different emphasis, its basic stance may be identified as “learning from the west while still maintaining the Chinese tradition”.**

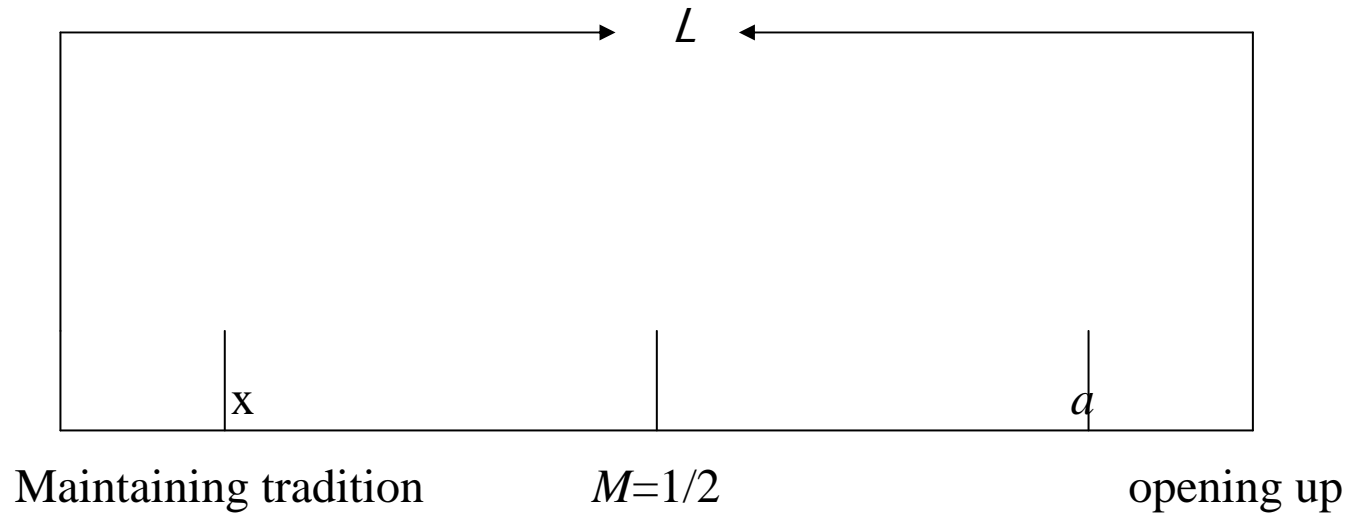
Chinese Approach to Opening Up

- **The main strength of this approach is to provide an optimal political compromise over the conflicts that may arise in the opening-up process**

A model of political compromise

- **The Confucian approach to conflicts is basically to take the middle of the road.**
- **He argued that for anything, the “middle” is the best.**

A model of political compromise



A model of political compromise

- **The objective of a politician is to maximize support.**
- **He should locate his policy on the line such that all the people would have the shortest distance to his policy.**

A model of political compromise

- **Suppose the politician chooses x as his policy position.**
- **At any point along the line, the number of people is n .**
- **From both sides of x , the total distance is:**

A model of political compromise

$$C = n \int_0^x z dz + n \int_0^{L-x} z dz$$

solve

$$C = n \left[\frac{x^2}{2} + \frac{(L-x)^2}{2} \right]$$

A model of political compromise

■ **F.O.C:**

$$\frac{dC}{dx} = n \left[\frac{2x}{2} + \frac{2(x-L)}{2} \right] = x + x - L = 2x - L = 0$$

A model of political compromise

$$x = L/2$$

A model of political compromise

Solve with least squared method:

- **x is the location of policy.**
- **To the left of X at point i , the distance between the political preference of the individual and x can be represented by:**

$$X_i - X$$

A model of political compromise

- To the right of x :

$$(L - X_i) - X$$

A model of political compromise

- **Square the total distance:**

- $$C = \sum \{(X_i - X)^2 + [(L - X_i) - X]^2\}$$
$$= \sum (2X_i^2 + 2X^2 - L^2 - 2LX_i - 2LX)$$

A model of political compromise

- **F.O.C:**

$$\frac{dC}{dX} = \sum (4X - 2L) = 0$$

A model of political compromise

- $2X=L$
- $X=1/2 L$

A model of political compromise

- **Is it a valid approach?**
- **Opening up is a complicated process and no universal rule should exist for an optimal solution.**
- **Subjecting this complicated process to this oversimplified rule could have harmful effect.**

A model of political compromise

- **The solution is different from that provided by economics.**
- **For given costs, if the marginal benefit of leaning from the west is higher than keeping the tradition, efforts and resources should be allocated to learning from the west.**
- **There is no compromise!**

A model of political compromise

- **The approach also contains the implication of combining the best of China with the best of the west?**
- **Is it feasible?**
- **Rosman (1992) said no.**

A model of political compromise

- **Emperor Kang Xi and Emperor Qiang Long were at an important time.**
- **Are they intelligent leaders?**
- **Do they have a world (global) view?**
- **If they had what would China have become?**

Who support or oppose free trade: 2003-2007

Country	Population with a positive view of trade (%)		Rise in level	Rise in %
	2003	2007		
US	78	59	-19	-24.4
Indonesia	87	71	-16	-18.4
Uganda	95	81	-14	-14.7
Italy	79	68	-11	-13.9
France	88	78	-10	-11.4
Turkey	82	73	-9	-11.0
Nigeria	95	85	-10	-10.5
Britain	87	78	-9	-10.3

Who support or oppose free trade: 2003-2007

Country	Population with a positive view of trade (%)		Rise in level	Rise in %
	2003	2007		
Mali	95	86	-9	-9.5
Egypt	67	61	-6	-9.0
Venezuela	86	79	-7	-8.1
Russia	88	82	-6	-6.8
Germany	91	85	-6	-6.6
Czech	84	80	-4	-4.8
Canada	86	82	-4	-4.7
S. Korea	90	86	-4	-4.4

Who support or oppose free trade: 2003-2007

Country	Population with a positive view of trade (%)		Rise in level	Rise in %
	2003	2007		
Slovakia	86	83	-3	-3.5
Senegal	98	95	-3	-3.1
Mexico	79	77	-2	-3.1
Peru	83	81	-2	-2.5
Lebanon	83	81	-2	-2.4
Ukraine	93	81	-2	-2.2
Ivory Coast	96	94	-2	-2.1
Brazil	73	72	-1	-1.4

Country	Population with a positive view of trade (%)		Rise in level	Rise in %
	2003	2007		
S Africa	88	87	-1	-1.1
Bulgaria	89	88	-1	-1.1
Japan	72	72	0	0.0
Tanzania	82	82	0	0.0
China	90	91	1	1.1
Ghana	88	89	1	1.1
Kenya	90	93	3	3.3
Bolivia	77	80	3	3.9

Country	Population with a positive view of trade (%)		Rise in level	Rise in %
	2003	2007		
Pakistan	78	82	4	5.1
Bangladesh	84	90	6	7.1
Argentina	60	68	8	13.3
India	69	89	20	29.0
Jordan	52	72	20	38.5

Absolute advantage

- **This proposition was proposed by Adam Smith.**

Absolute advantage

- **Definition of absolute advantage:**
- An individual has an *absolute advantage* in the production of some good when he or she can produce it using fewer resources (labor time in the example here) than another individual can.

Absolute advantage

- **The above definition also applies to a country.**
- **A country has an absolute advantage in good x if one unit of labor produces more x than is produced by one unit of labor in the other country.**

Absolute advantage

- The concept of absolute advantage does not mean that an individual should have advantage in producing two goods.
- He may have absolute advantage in producing one good while the other party may have advantage in producing the other good.

Absolute advantage

- **Suppose in one-labor year, China can produce 20 tons of steel and 10 cars while the US produce 10 tons of steel and 40 cars.**
- **So China has a an absolute advantage in steel and the US in automobiles.**

Absolute advantage

One-labor year of production

Products	U.S.	China
Steel	10/year	20/year
Automobiles	40/year	10/year

Absolute advantage

- **The determination of the trade pattern is obvious.**
- **The U.S. should specialize in producing automobiles and China in steel.**

Absolute advantage

- **For example, we move one worker in the U.S. out of steel production and into automobile production.**
- **Similarly, we move two Chinese workers out of automobile production and into steel production.**

Absolute advantage

Goods	U.S. (1 worker)	China (2 workers)	Total
Steel	-10	+40	+30
Automobiles	+40	-20	+20

Absolute advantage

- **It demonstrates that simply moving the workers in each country into the industry in which the country has the advantage results in an increase in the world output of both goods.**
- **The countries may then engage in trade that leaves both better off.**

Absolute advantage

- Another example:
- Maryanne and Gilligan were the two survivors in a shipwreck.
- They were on a deserted island without knowing each other's presence.

Absolute advantage :

Labor requirements

	1 quart of berries	1 fish
Maryanne	1 hour	1 hour
Gilligan	1.5 hours	3 hours

Absolute advantage

- On the island, the only resource used for production is labor.
- Obviously, Maryanne has absolute advantage in both berry picking and fishing over Gilligan.
- We can also say that Maryanne is more productive in producing both goods than Gilligan.

Absolute advantage

- Obviously, Maryanne has absolute advantage in both berry picking and fishing over Gilligan.
- We can also say that Maryanne is more productive in producing both goods than Gilligan.

Absolute advantage

- Is it profitable for both to trade when one has absolute advantage in both goods?
- Ricardo's answer is "yes" because comparative advantage can be the basis of trade.
- But Smith said "no"!

Absolute advantage

- It should be noted that the concept of absolute advantage does not mean that an individual should have advantage in producing two goods.
- He may have absolute advantage in producing one good while the other party may have advantage in producing the other good.

Absolute advantage

- We look another example.
- The number of tons of steel and cars that China and the US can produce is given as follows.

Absolute advantage

One labor year of production

Products	U.S.	China
Steel	30/year	20/year
Automobiles	40/year	10/year

Absolute advantage

- In this case, the United States has absolute advantage in producing both goods.
- If the US were to produce both goods it would leave China doing nothing.

Absolute advantage

- In fact, Adam Smith believed that in this case there was no basis for trade between the two parties because one party is more efficient than the other in the production of both goods.
- In general, absolute advantage is not a realistic guide for allocating tasks to different workers.

Absolute advantage

- This point was further clarified by David Ricardo in his book, *The Principles of Political Economy and Taxation*, which stressed that the potential gains from international trade was not confined to absolute advantage.

Chapter 2

- Ricardo theory of comparative advantage

comparative advantage

- Theories explaining trade in goods, broadly, can be divided into categories:
- First, in a perfect competition, constant returns to scale framework, trade flows are induced by comparative advantage from:
 - (1) International difference in technologies (Ricardian model);
 - (2) International difference in relative factor endowments (H-O);
 - (3) International differences in tastes and preferences (Linder hypothesis);

comparative advantage

- Second, trade can also arise when countries are identical, but only when comparative advantage is due to a context of IRS and imperfect competition.

Assumptions of the Basic Ricardian Model

1. Each country has a fixed endowment of resources, and all units of each particular resource are identical.
2. The factors of production are completely mobile between alternative uses within a country. This assumption implies that the prices of factors of production also are the same among these alternative uses.

Assumptions of the Basic Ricardian Model

3. The factors of production are completely immobile externally;
 - That is, they do not move between countries. Therefore, factor prices may be different between countries prior to trade.
4. A labor theory of value is employed in the model.
 - Thus, the relative value of a commodity is solely based on its labor content.

Assumptions of the Basic Ricardian Model

- From a production standpoint this implies that:
 - (a) no other inputs are used in the production process, or
 - (b) any other inputs are measured in terms of the labor embodied in their production, or
 - (c) the other inputs/labor ratio is the same in all industries.
- In simple terms, it means that a good embodying two hours of labor is twice as expensive as a good as a good using only one hour.

Assumptions of the Basic Ricardian Model

5. The level of technology is fixed for both countries, although the technology can differ between them.
6. Unit costs of production are constant.
 - Thus, the hours of labor per unit of production of a good do not change, regardless of the quantity produced.
 - This means that the supply curve for any good is horizontal.

Assumptions of the Basic Ricardian Model

7. There is full employment.
8. The economy is characterized by perfect competition.
 - No single consumer or producer is large enough to influence the market; hence, all are price takers. All participants have full access to market information, there is free entry to and exit from an industry, and all prices equal the marginal cost of production.

Assumptions of the Basic Ricardian Model

9. There are no government-imposed obstacles to economic activity.
10. Internal and external transportation costs are zero.
11. We initially confine our analysis to a two-country, two-commodity ‘world’ to simplify the presentation of the basic Ricardian model.
 - This assumption will be dropped later to make the model more realistic.

Definition of comparative advantage

- **For an individual to have a comparative advantage in some good, he must be able to produce that good with a smaller opportunity cost.**
- **Similarly, a country has a comparative advantage in a good if its opportunity cost of the good in terms of another good is less than in the other country.**

Definition of comparative advantage

Labor requirements

	1 quart of berries	1 fish
Maryanne	1 hour	1 hour
Gilligan	1.5 hours	3 hours

Opportunity cost of:

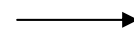
	1 quart of Berries	1 Fish
Maryanne	1 fish	1 quart of berries
Gilligan	0.5 fish	2 quarts of berries

Definition of comparative advantage

- **Maryanne has a lower opportunity cost for one fish, so she has a comparative advantage in fishing.**
- **Gilligan has a lower opportunity cost for berry picking (half a fish).**
- **Therefore, while Gilligan has an absolute advantage in nothing, he has a comparative advantage in berry picking.**

Definition of comparative advantage

- Let's see what happens as the two decide to move toward specialization according to comparative advantage.
- If Gilligan decides to catch one fewer fish, he could save 3 hours to pick 2 quarts of berries.



Gilligan: 1 fish (down) 2 berries (up)

Definition of comparative advantage

- If Marryanne decides to catch one additional fish, she must give up 1 berry.

Marryanne: 1 fish (up) 1 berry (down)
 →

Definition of comparative advantage

- Suppose before specialization, Maryanne catches two fish and two quarts of berries. Gilligan catches one fish and two quarts of berries.

Definition of comparative advantage

Total production before and after specialization

	Before specialization	After specialization
Maryanne	2 fish and 2 quarts of berries	4 fish
Galligan	1 fish and 2 quarts of berries	4 quarts of berries

Definition of comparative advantage

- Now on the island, there are four fish and four quarts of berries as compared with three fish and four quarts of berries.

Definition of comparative advantage

- **So we can conclude:**
- ***Total production of goods and services will be the greatest when individuals specialize according to their comparative advantage.***
- ***This is an important reason why specialization and exchange lead to higher living standards than self-sufficiency.***

Definition of comparative advantage

- **What is true for Maryanne and Gilligan is also true for the whole economy.**

Definition of comparative advantage

- **If an economy organizes its production according to the principle of comparative advantage and let the producers exchange their products, its total output would increase significantly.**

A more formal analysis of comparative advantage

- Ricardo presented an example of case describing the production of two commodities, wine and cloth in two countries, England and Portugal.
- The labor requirements per unit of production are given in the Table.

A more formal analysis of comparative advantage

Ricardian Production Conditions in England and Portugal

	Wine	Cloth	Price ratio in Autarky
Portugal	80hrs./bbl.	90hrs./yd.	1W:8/9C (or 1C:9/8W)
England	120hrs.bbl.	100hrs.yd.	1W:6/5C (or 1C:5/6W)

A more formal analysis of comparative advantage

- In this example, Portugal can produce both goods more efficiently than England.
- According to Adam Smith, there is no basis for trade between the two countries.
- But Ricardo noted that Portugal is relatively more efficient in the production of wine than cloth, and England has a smaller disadvantage in the production of cloth.

A more formal analysis of comparative advantage

- **Because of the difference in labor requirements (relative cost differences), there is an opportunity for more output to be produced.**

Autarky Price Ratios

- As shown in the Table, before trade, 1 wine could exchange for $6/5$ (1.2) yards of cloth in England.
- In Portugal, 1 wine could exchange for only $8/9$ (0.889) yards of cloth.
- If Portugal specializes in wine production it can sell wine to England at a price of 1 wine: $6/5$ yards of cloth, while at home 1 wine can only exchange for $8/9$ yards of cloth.

Autarky Price Ratios

- Similarly, England could specialize in producing cloth and exporting the cloth to Portugal in exchange for wine
- In this case, with 1 yard of cloth it could receive, at the Portuguese price, $9/8$ barrels of wine.
- But at home 1 yard of cloth could only sell for $5/6$ barrels of wine.

Autarky Price Ratios

- Obviously, both countries gain through specialization and trade.
- It shows that although one country may have absolute advantage in producing both goods, both can gain through specializing according to comparative advantage.

Price Ratios and Gains from Trade

- **The basis for and the gains from trade depend on comparative, not absolute advantage.**

Price Ratios and Gains from Trade

- **Very Often, we hear people say that we should produce the goods on our own instead of importing from abroad.**
- **They believe that doing so is patriotic.**
- **However, the view contradicts Ricardo's theory of comparative advantage.**

Price Ratios and Gains from Trade

- Year 2004:
- Soyabean import 20million tons.
- Domestic production: 18million tons.
- China is now importing soyabeans from abroad.
- If we were to produce all these soyabeans as a substitute for imports, we may have to use all the land in the Northeast region (inaccurate calculation).
- Also there is a cost of water resources.

Price Ratios and Gains from Trade

- With autarky, the relative price in England is: 1 wine exchanges for 1.2 ($6/5$) yards of cloth.
- So England would be happy to have a price ratio that could buy one barrel of wine with less than 1.2 yards of cloth.
- With autarky in Portugal, the relative price is: 1 wine exchanges for 0.89 ($8/9$) yards of cloth.
- Portuguese would be happy if they can sell one barrel of wine for more than 0.89 yards of cloth.

Price Ratios and Gains from Trade

- The graph illustrates that if the British can buy the wine at a price less than 1.2 and the Portuguese can sell the wine at the price above 0.89, both can gain.
- Between the price ratios of 1.2 and 0.98, it is the area of gains from trade for both

Price Ratios and Gains from Trade

- Ricardo did not examine the precise determination of the international trade price ratios or the terms of trade.
- But the important point is that after trade, there will be a common price of wine in terms of cloth in the two countries.

Price Ratios and Gains from Trade

- After trade, wine is coming into England (the new supply) , the price of wine will fall.
- Portugal is buying from England the cloth (new demand), so the price of cloth will rise;
- So, in England the price ratio (cloth/wine) will fall after trade.

Price Ratios and Gains from Trade

- In Portugal, because cloth is coming from England, the price of cloth will fall.
- England is buying more wine from Portugal, the price of wine will rise.
- So, in Portugal: price ratio (cloth/wine) will rise after trade.

Price Ratios and Gains from Trade

- In this process, the pre-trade ratios in the two countries will converge toward each other through trade.
- Eventually, a single price will prevail in the markets of the two countries.

Price Ratios and Gains from Trade

- Ricardo arbitrarily assumed that the price ratio after trade was 1W:1C.
- In this case, England could devote 100 hours of labor for producing cloth and get 1 C.
- This 1 C could then be exchanged with Portugal for 1 W.

Price Ratios and Gains from Trade

- Thus, 100 hours of labor in England have indirectly produced 1 unit of wine.
- If England had chosen to produce 1 W at home, the labor cost would have been 120 hours.
- This is called an indirect way to wealth.

Price Ratios and Gains from Trade

- The 1 unit of wine has not been produced by the British, but by the Portuguese.
- Trade has saved England 20 hours of labor for each unit of imported good.

Price Ratios and Gains from Trade

- Instead of expressing the gains from trade in terms of labor time saved, another way to state the same result is that with trade more goods can be obtained for the same amount of labor time than is possible in autarky.

Price Ratios and Gains from Trade

- There is obviously a gain from trade for Portugal in terms of labor saved.
- Portugal can take 80 hours of labor and produce 1 unit of wine.
- With the 1W Portugal can obtain one unit of cloth through trade.

Price Ratios and Gains from Trade

- Direct production of 1C in Portugal would have required 90 hours of labor; trade has enabled Portugal to gain or save 10 hours of labor per unit of its imported good.
- Thus, unlike the zero-sum game of the Mercantilists, trade is a positive sum game.

Price Ratios and Gains from Trade

- In general:
- **The closer the price ratios are to a country's internal autarky price ratio, the smaller the gain for that country from international trade.**

The Equilibrium Terms of Trade

- **Terms of trade that bring about balanced trade (exports=imports) for each country.**

The Equilibrium Terms of Trade

- **If the Ricardian ratio 1W:1C left Portugal with a balance of trade surplus, the terms of trade would shift toward more expensive wine, say 1W: 1.1C.**

The Equilibrium Terms of Trade

- **This shift occurs because the price-specie-flow mechanism raises prices and wages in the surplus country, Portugal, and depresses the prices in the deficit country, England.**

The Equilibrium Terms of Trade

- **The essence of Ricardo's argument is that international trade does not require different absolute advantages and that it is possible and desirable to trade when comparative advantages exist.**

The Equilibrium Terms of Trade

- **Suppose that Country A has 9000 labor hours available and Country B has 16,000 labor hours.**

The Equilibrium Terms of Trade

Ricardian Production Characteristics

	Cloth	Wine	Autarky Price Ratios
Country A	1hr./yd.	3hrs./bbl.	1W:3C
Country B	2hrs./yd.	4hrs/bbl.	1W:2C

The Equilibrium Terms of Trade

- **Country A has a comparative advantage in cloth as the relative labor costs between the two countries (1/2) is less than that in wine (3/4).**
- **The basis of trade is also evident in the fact that the autarky price ratios are different. Trade will take place between the autarky prices in two countries.**

The Equilibrium Terms of Trade

- **Country A can produce 9000 yards of cloth and no wine, or 3000 barrels of wine and no cloth, or any other combinations of both goods that absorbs the 9000 hours of labor available in the economy.**

The Equilibrium Terms of Trade

- **With 16,000 labor hours available, Country B can produce 8000 yards of cloth and no wine, or 4000 barrels of wine and no cloth, or any other combination of these goods given the availability of total labor.**

The Equilibrium Terms of Trade

- **Suppose:**
- **Country A produces 6000 yards of cloth and 1000 barrels of wine prior to trade;**
- **Country B produces 3000 yards of cloth and 2500 barrels of wine.**
- **The relative price is 1W:2.5C.**

The Equilibrium Terms of Trade

- **Suppose also that country A exports 2500 yards of cloth in exchange for 1000 barrels of wine from country B, but the two countries do not alter the production.**
- **How will the pre-trade and post-trade scenarios compare?**

The Equilibrium Terms of Trade

- Prior to trade, country A produced and consumed 6000C and 1000W that exhausted all the available labor hours (9000).
- After trade, country A consumes 3500C (6000 cloth produced –2500 cloth exported to country B) and 2000W (1000 wine produced at home +1000 wine imported).

The Equilibrium Terms of Trade

- **This consumption bundle would require 9500 labor hours if produced at home. Country A thus has gained the equivalent of 500 labor hours (9500-9000) through trade.**

The Equilibrium Terms of Trade

What about country B?

- Prior to trade, it produced and consumed 3000 yards of cloth and 2500 barrels of wine that exhausted 16000 available labor hours.
- After trade, country B consumes 5500 yards of cloth (3000C domestically produced+2500C imported) and 1500 barrels of wine (2500Wine produced at home-1000W exported).

The Equilibrium Terms of Trade

- **This combination would need 17000 labor hours ($5500 \times 2 + 1500 \times 4$) if produced at home.**
- **So country B has gained the equivalent of 1000 labor hours ($17000 - 16000$) through trade.**

Complete Specialization:

- **In the above example trade has not altered the production pattern of cloth and wine in the two trading partners.**
- **When trade takes place, countries will specialize in the production in which they have the comparative advantage.**

Complete Specialization:

- **Assume that country A produces only cloth and B produces only wine, a case of complete specialization.**
- **As already known, A can produce 9000 yards of cloth and B produce 4000 barrels of wine.**
- **The price ratio remains at 1W:2.5C**

Complete Specialization:

- They exchange 2000 barrels of wine for 5000 yards of cloth.
- In this instance, country A would consume 4000 cloth (9000C-5000C exported) and 2000W (all imported).

Complete Specialization:

- **This consumption bundle would have a labor value of 10,000 labor hours ($4000 \times 1 + 2000 \times 3$) in country A.**
- **It is greater than the labor value of consumption in either autarky or in the case of trade with no production change.**

Complete Specialization:

- **Country B is also better off because it now consumes 5000 yards of cloth (all imported) and 2000 barrels of wine (4000 barrels produced-2000 barrels exported) with a labor value of 18000 hours ($5000 \times 2 + 2000 \times 4$).**
- **This contrasts with a labor value of 16000 in autarky and 17000 in incomplete specialization.**

Complete Specialization:

- **Classical writers concluded that if there is a basis for trade, it automatically leads to a country toward complete specialization in the commodity in which it has comparative advantage. Consumption remains diversified across goods as dictated by consumer preference.**

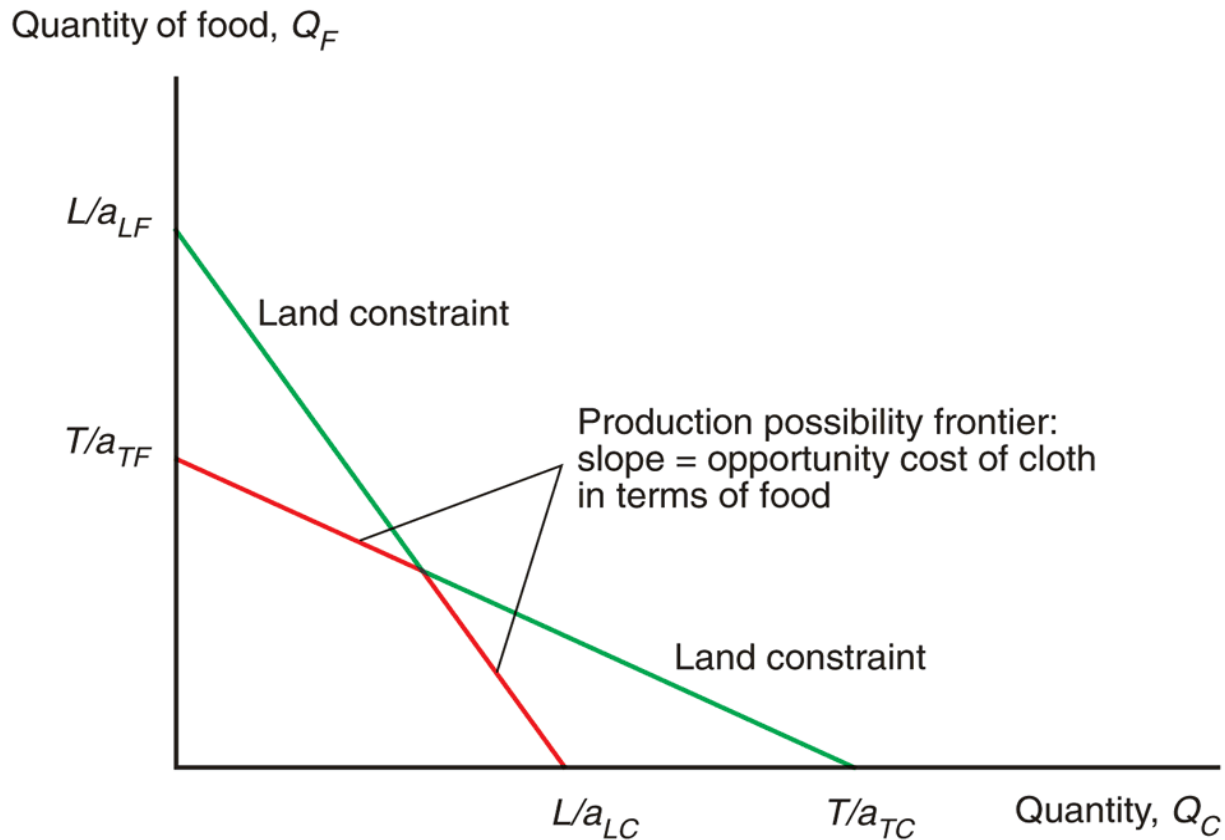
Technological take over by less developed countries

- **It is generally observed that lagers can always catch up the leaders because the lagers are believed to have a comparative advantage by concentrating on the technology that leaders have devoted few resources.**

Production Possibilities:

- **The basis for trade and the gains from trade can also be demonstrated by the concept of production possibilities frontier.**
- **Following the above example by keeping in mind that A has 9000 labor hours and B 16000 labor hours.**

Production Possibilities:



Production Possibilities:

Country A

Cloth	Wine
9000 yds.	0 bbl.
7500	500
6000	1000
4500	1500
3000	2000
1500	2500
0	3000

Production Possibilities:

- The production possibility curve is a straight line because of the constant costs assumption. The slope of the PPF reflects the opportunity cost in autarky.
- With the complete specialization in cloth, the largest set of consumption possibilities occurs .
- In this case it can export 9000 yards of cloth in exchange for 3600 wine ($9000/2.5$).

Production Possibilities:

- **The situation is similar to for country B.**

Complete versus Partial Specialization

- The constant cost assumption would lead to complete specialization in production in both countries.
- But under increasing costs, trade would only lead to partial specialization.
- This is because under this assumption, unit costs increase as both countries produce more and more of their export goods. Thus, increasing costs give rise to a mechanism that equalizes costs in both countries.
- So after cost differential cease to exist, the basis for continued specialization is eliminated.

Complete versus Partial Specialization

- **Complete specialization generally takes place under constant costs assumption.**
- **The only exception to complete specialization under constant costs assumption is in the case of a small country trading with a large country.**

Complete versus Partial Specialization

- **In this situation, only the small country specializes completely in the production of the commodity in which it has a comparative advantage.**
- **The large country continues to produce both goods, even with international trade.**

Complete versus Partial Specialization

- The question is why would the US engage in trade if it did not gain anything?
- It can be answered only we look at more realistic picture, that is assuming that there exists at least one other large country, say China, that has a comparative advantage in cotton production.

Complete versus Partial Specialization

- In this case, the after-trade relative price would be determined jointly by the demand and supply in both countries.
- Both countries the US and China would gain from trade.

Complete versus Partial Specialization

- France would enter the market trading at the prevailing relative price ratio and would reap all the benefits from its own trade.
- But France would run a risk with complete specialization as if there is reduction on international demand the French economy may be in difficulty.

Some concluding observations

- So far we have not said about the basis for the comparative advantage the country may have in trade.
- Indeed the classical theory does not offer a satisfactory explanation of why production conditions differ between countries.

Some concluding observations

- The costs of resources between nations are generally taken as given.
- Adam Smith thought that participation in foreign trade could be a strong positive force for development.
- He argued that export markets could enable a country to use resources that otherwise would remain ideal.

Some concluding observations

- The resulting movement to full employment would increase the level of economic activity and allow the country to acquire foreign goods to enhance consumption, investment and growth.
- Ricardo and subsequent classical economists argued that the benefit from trade resulted not from the employment of underused resources but from the more efficient use of domestic resources which came about through the specialization in production according to comparative advantage.

Some concluding observations

- Besides the static gains resulting from resource allocation, economists such as John Stuart Mill pointed out the dynamic effects of trade that were of critical importance to a country's economic development.
- These included the ability to acquire foreign capital and foreign technology and the impact of trade and resource allocation on the accumulation of savings.
- In addition, the benefits associated with increased contact with other countries and cultures could help break the binding chains of tradition, alter wants and stimulate entrepreneurship, innovations and inventions.
- The economic growth and development propelled by trade can of course generate some undesirable consequences.

Some concluding observations

- Specialization in production that have few links to the rest of the economy can lead to unbalanced pattern of growth and do little more than produce an export enclave, a result that often negate (offset) the dynamic effects of trade.
- Export processing zones in China, an enclave?

Some concluding observations

- Thus, the classical writers have made us aware that trade not only produce static gains but also can be a positive vehicle for economic growth and development.
- Any country can benefit from trade in which some foreign goods can be purchased at prices lower than at home, even if it is absolutely less efficient in the production of all goods compared to a more developed trading partner.

Chapter 3

- Extensions and Tests of the Classical Model of Trade

Preview

- The classical model in money terms
- Changes in wages and exchange rates
- Multiple commodities

The classical model in money terms

- The classic model is made more realistic by incorporating wage rates and exchange rates.
- This exercise permits us to examine the role of wages, productivity and exchange rates in influencing trade patterns.

The classical model in money terms

- **Multiply the labor requirement per unit of product by the wage rate to obtain the monetary value of the commodity.**

Labor requirements and money prices

	Wage/hour	Cloth		Wine	
		Labor/ unit	Price	Labor /unit	Price
England	£1/hr.	1hr./yd.	£1	3hrs./ bbl	£3
Portugal	0.6esc/hr.	2hrs./yd.	1.2 esc.	4hrs./ bbl	2.4 esc.

The classical model in money terms

- As already known that England has the absolute advantage in the production of both goods.
- Assume that the exchange rate is 1 escudo=£1.

The classical model in money terms

- In England the labor requirement per unit of cloth is 1 hour as before.
- The hourly wage rate is 1 pound.
- Given labor cost is the only cost component in the product, the price of the product is 1 pound.

The classical model in money terms

- The pattern of trade responds to the money price differences.
- **As the exchange rate is 1 escudo=£1, cloth will be purchased in England because the price of cloth in either currency is less in England (1£/yard or 1 escudo/yard) than in Portugal (1.2 escudo/yard or 1.2£/yard).**

The classical model in money terms

- Wine, however, is cheaper in Portugal, so customers will buy Portuguese wine.
- This result is the same as that reached in the examination of relative labor efficiency between the two countries (that is England should export cloth and import wine since $1/2 < 1/4$).

Changes in wages and exchange rates

- In the monetized model, the cost condition necessary for a country to export is (England as country 1 in the example):

$$a_{1j} W_1 e = a_{2j} W_2$$

- a_{1j} = unit labor requirement for commodity j in country 1.
- W_1 = wage rate in country 1's currency;

Changes in wages and exchange rates

- E = exchange rate expressed in terms of 2's currency per unit of 1's currency-escudos/pound;
- a_{2j} = unit labor requirement for commodity j in country 2;
- W_2 = wage rate in country 2 in 2' s currency

Changes in wages and exchange rates

- It is clear that England the labor cost in England for cloth is lower since:

$$(1 \text{ hr}) \cdot (\text{£}1/\text{hr.}) \cdot (1 \text{ esc./£}1) < (2 \text{ hrs.}) \cdot (0.6 \text{ esc./ hr.}).$$

- **So England should export cloth.**

Changes in wages and exchange rates

- The cost of wine is higher in England than in Portugal since:

$$(3 \text{ hrs}) \cdot (\text{£}1/\text{hr.}) \cdot (1 \text{ esc./£}1) > (4 \text{ hrs.}) \cdot (0.6 \text{ esc./ hr.}).$$

- So England should import wine and export cloth.

Changes in wages and exchange rates

- It makes clear with this monetized model that the ability to export depends not only on the relative labor efficiency but also on the wage rates and exchange rates.
- Shifts in wage rates and exchange rates can affect trade.

Changes in wages and exchange rates

- The above export condition is rewritten in the following way:

$$a_{1j} W_1 e < a_{2j} W_2$$

$$a_{1j}/a_{2j} < W_2/(W_1 \cdot e)$$

Changes in wages and exchange rates

- A fall in W_2 reduces the relative competitiveness in country 1 whereas a fall in W_1 enhance the its cost competitiveness.
- Similarly, if the pound rises in value (a rise in e) would increase the cost of English goods, thus offsetting England's initial relative labor efficiency in cloth.

Changes in wages and exchange rates

- Since the changes in the wage rate can alter the degree of cost advantage to a country, changes that are too severe could eliminate a country's ability to export or its willingness to import a good.

Changes in wages and exchange rates

- A country would lose its ability to export if wages rose sufficiently to cause the domestic price to exceed the foreign price.
- The same country would have no desire to import a good if its wage rate fell to the point that the price of the import good was cheaper at home than abroad.
- Thus, the home wage rate must lie within a certain range if trade is to take place by comparative advantage.

Changes in wages and exchange rates

Evaluating the classical model

- The classical model is believed to be limited in the complex world.
- But economists have been interested in the extent to which its general conclusions are realized in international trade.

Changes in wages and exchange rates

- In particular, economists focused on the link between relative labor productivity, relative wages and structure of exports.

Changes in wages and exchange rates

- One of the earliest studies was conducted by G.D.A. MacDougall in 1951. (British and American Exports: A Study Suggested by the Theory of Comparative Costs, Part I.” *The Economic Journal*, no. 244, December 1951).
- In his study, the relative performance of the UK and the US was examined using the export condition described above.

Changes in wages and exchange rates

- MacDougall wanted to see if export performance is consistent with relative labor productivities and wages in two countries.
- He argued that, relative to the UK, the US should be more competitive if its labor is more productive than that of UK, after taking into account the wage rate differences.

Changes in wages and exchange rates

- Another way to state is the value of US exports should be greater than that of the UK if the ratio of labor productivity in the US to that in the UK in that industry is greater than the ratio of wages between the two countries.

Changes in wages and exchange rates

- Based the above discussion, we have export condition as:

$$a_{USj}/a_{UKj} < W_{UK}/(W_{US} \cdot e)$$

- Whenever the ratio of US to UK productivity in a given industry is less than the ratio of US to UK wages, the US should dominate in exports of that good.

Changes in wages and exchange rates

- The result of his study shows that when the relative US productivities increase, the US would tend to export more of those goods (more accurately the advantage in productivity exceeds the advantage in wage rates) .

commodity Examples in MacGougall's Study

	Pre-world war II	1938	1937
	Relative output per worker (US/UK)	USwages/Ukwages (weekly, \$)	Exports (US/UK)
Pig iron	3.6	1.5	5.1
Motor cars	3.1	2.0	4.3
Machinery	2.7	1.9	1.5
Glass containers	2.4	2.0	3.5
Paper	2.2	2.0	1.0
Beer	2.0	2.6	0.056
Hosiery	1.8	1.9	0.30
Cigarettes	1.7	1.5	0.47
Woolen and worsted	1.35	2.0	0.004

Changes in wages and exchange rates

- The MacDougall general framework has been applied to 1990 data in work by Stephen S. Golub.
- He focused on US trade with various countries, primarily in the Asia-Pacific region, and constructed an index of unit labor costs in manufacturing in various countries.

Changes in wages and exchange rates

- The unit labor cost for an industry is defined as the labor cost per unit of output and is calculated by dividing the total wage bill (including fringe benefits) by the industry's output.

Changes in wages and exchange rates

- Noting that the manufacturing wages in Malaysia were about 10 percent of wages in the US in 1990, an observer unfamiliar with the Classical Model would wonder how US industries could ever compete with Malaysian industries.

Changes in wages and exchange rates

- However, Golub calculated that Malaysian productivity in manufacturing was also about 10 percent of the US.
- Hence, unit labor costs would be similar in general for the two countries.

Changes in wages and exchange rates

- Working within the unit labor cost framework, Golub then examined the possible association of comparative unit labor costs by individual industries with trade performance.
- Although unit labor costs may be roughly similar across countries for manufacturing sector in the aggregate, they differ by specific industries, reflecting the comparative advantage in production.

Changes in wages and exchange rates

- For example, Golub found that labor productivity in Japan was about 60 percent below the US in the food industry but about 20 percent above the US level in automobile and 70 percent above in steel.

Changes in wages and exchange rates

- Indeed, the US had a trade surplus with Japan in food and deficits in automobiles and steel.
- In similar comparisons across industries in other countries, relative productivity, unit labor costs and bilateral trade patterns did appear consistent with Classical theory.

Changes in wages and exchange rates

- Hence, the Ricardian/MacDougall results tended to be confirmed for 1990.

Changes in wages and exchange rates

Limitations of the classical model

- The classical model is not sufficient for understanding the basis for trade.
- Labor theory of value and constant costs.
- Changing resource endowments
-

Changes in wages and exchange rates

- But the classical model provides useful insights for the direction of the trade policy.
- Free trade is a means for a country and the world to enhance well-being;
- In order to fully realize the benefits of specialization and exchange through increased efficiency, resources need to be mobile within countries.

Changes in wages and exchange rates

- Government restraints, taxes on industry reduce economic competitiveness and gains from trade.

Multiple commodities

- The discussion so far has focused on the case of two commodity and two-country framework. In the real world trade would involve more than two product. The concept of comparative advantage can be extended into a larger group of products.

Multiple commodities

- Unit production conditions in a two-country, multicommodity Ricardian Framework.

	Wage/hr	Wine	Cutlery	Cloth	Hardware	Wheat	Cheese
Spain	2 pesetas	4 hrs	12 hrs	6hrs	15 hrs	5 hrs	7 hrs
Germany	3.2 marks	3 hrs	4 hrs	5 hrs	6 hrs	2.8 hrs	3 hrs

Multiple commodities

- Suppose the exchange rate is 0.8 marks/1 peseta. In this situation, the relative labor requirement, (a_{1j}/a_{2j}) must be less than $W_2/(W_1 e)$ in order for Spain to export the good.