

# CHAPTER 1: INTRODUCTION

The body of international economics -> 2 parts:

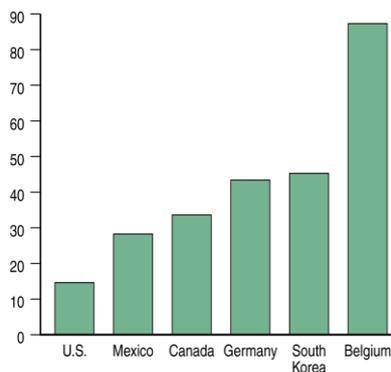
- About trade
  1. E.g.: EU-bikes: The Chinese wants to import bikes on the European Market. The European bike makers, were not happy when the Chinese came up with the bikes here on the European market, because this bikes are so cheap. The European bike Federation went to the European commission and complained about the cheap import from China. The European commission putted a tax on the import of Chinese bikes on the European market. Next thing that happened: the Chinese tried to go around these taxes by passing to other countries (export them to Malaysia, they change something and it is a Malaysian bike).
    - ➔ It is good for the consumers here, it is bad for producers. There is a conflict of interest here. Then you have the government that should decided to put a tax on Chinese bikes -> Government Policy



- About Money
  1. E.g.: Big Mac Index: They use the price of the Big Mac in China as some indicator for the prices in their country. -> PPP (Purchasing Power Parity). = indicator for the real purchasing power of your money, outside your own country.
    - ➔ Very good indicator of what the exchange rate should be.
  2. Exchange rate is a very big issue in the second part, together with the balance of payments of a country.

## WHAT IS INTERNATIONAL ECONOMICS ABOUT?

Exports, imports (percent of national income)



the last 20 years, because of globalization.

- International economics is about how nations interact through:
  1. trade of goods and services, flows of money, and investment (labor).
    - International economics is an old subject, but continues to grow in importance as countries become tied more to the international economy.
      1. By Globalization: the ties between countries are becoming stronger over the years. Graphics: It gives you the exports and imports as a percentage of the national income. Belgium is an open economy. What you don't see, it that the percentage had grown over

- Nations are now more closely linked than ever before.

## ABOUT TRADE

### GAINS FROM TRADE

- Several ideas underlie the gains from trade.
  1. When a buyer and a seller engage in a voluntary transaction, both can be made better off.
    - ➔ Not only for international trade, but also in the same country. You exchange your money for a loaf of bread, a bike ... Why? It's beneficial to both parties. The same goes when you trade internationally.
      - Norwegian consumers import oranges that they would have a hard time producing.
      - The producer of the oranges receives income that it can use to buy other things that it desires.
  2. How could a country that is the most (least) efficient producer of everything gain from trade?
    - Countries use finite resources to produce what they are most productive at (compared to their other production choices), then trade those products for goods and services that they want to consume.
    - Countries can specialize in production, while consuming many goods and services through trade.
  3. Trade benefits countries by allowing them to export goods made with relatively abundant resources and imports goods made with relatively scarce resources.
  4. When countries specialize, they may be more efficient due to larger-scale production.
  5. Countries may also gain by trading current resources for future resources (international borrowing and lending) and due to international migration.
- Trade is predicted to benefit *countries as a whole* in several ways, but trade may harm *particular groups within a country*.
  - International trade can harm the owners of resources that are used relatively intensively in industries that compete with imports.
  - Trade may therefore affect the distribution of income within a country.

### PATTERNS OF TRADE

- Differences in *climate and resources* can explain why Brazil exports coffee and Australia exports iron ore.
- But why does Japan export automobiles, while the U.S. exports aircraft?
- Why some countries export certain products can stem from differences in:
  - Labor productivity
  - Relative supplies of capital, labor and land and their use in the production of different goods and services

### EFFECTS OF GOVERNMENT POLICIES ON TRADE

- Policy makers affect the amount of trade through
  - *tariffs*: a tax on imports or exports,
  - *quotas*: a quantity restriction on imports or exports,
  - *export subsidies*: a payment to producers that export,

- or through other regulations (ex., product specifications) that exclude foreign products from the market, but still allow domestic products.
- What are the costs and benefits of these policies?

## ABOUT MONEY

### INTERNATIONAL FINANCE TOPICS

- Exchanging risky assets such as stocks and bonds can benefit all countries by diversification that reduces the variability of income – another source of gains from trade.
- Most international trade involves monetary transactions.
- Many monetary events have important consequences for international trade.

### BALANCE OF PAYMENTS

- Governments measure the value of exports and imports, as well as the value of financial assets that flow into and out of their countries.
  - Trade deficits, where countries import more than they export in value, may be offset by net inflows of financial assets.
- The *official settlements balance*, or the balance of payments, measures the balance of funds that central banks use for official international payments.
- All three values are measured in the government's *national income accounts*.

### EXCHANGE RATE DETERMINATION

- *Exchange rates* are an important financial issue for most governments.
- Exchange rates measure how much domestic currency can be exchanged for foreign currency and thus affect:
  - how much goods denominated in foreign currency (imports) cost in the domestic country.
  - how much goods denominated in domestic currency (exports) cost in foreign markets.
- Some exchange rates change continually (float) while others are fixed for periods of time.

### INTERNATIONAL POLICY COORDINATION

- In an integrated economy, one country's economic policies usually affect other countries as well, leading to the need for some degree of policy coordination.
  - Depends on type of exchange rate regime.
- Capital markets, where money is exchanged for promises to pay in the future, have special concerns in an international setting:
  - Currency fluctuations can alter the value paid. Countries, especially developing ones, might default on debt.

### INTERNATIONAL TRADE VERSUS FINANCE

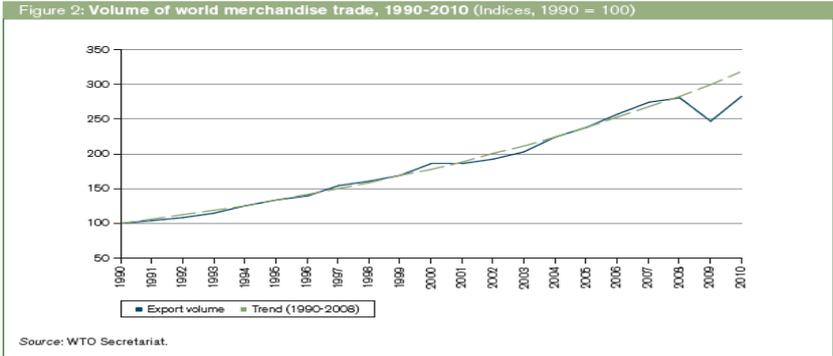
- International trade focuses on transactions involving movement of goods and services across nations.
  - International trade theory and policy (chapters 2–13)
- International finance focuses on financial or monetary transactions across nations.
  - International monetary theory and policy (chapters 14–22)

# CHAPTER 2: WORLD TRADE – AN OVERVIEW

## SIZE OF WORLD TRADE

### WORLD TRADE(GOODS AND SERVICES, BLN\$)

	2005	2006	2007	2008	2010
Goods	10159	11783	13619	15717	15238
Services	2415	2755	3290	3780	3665



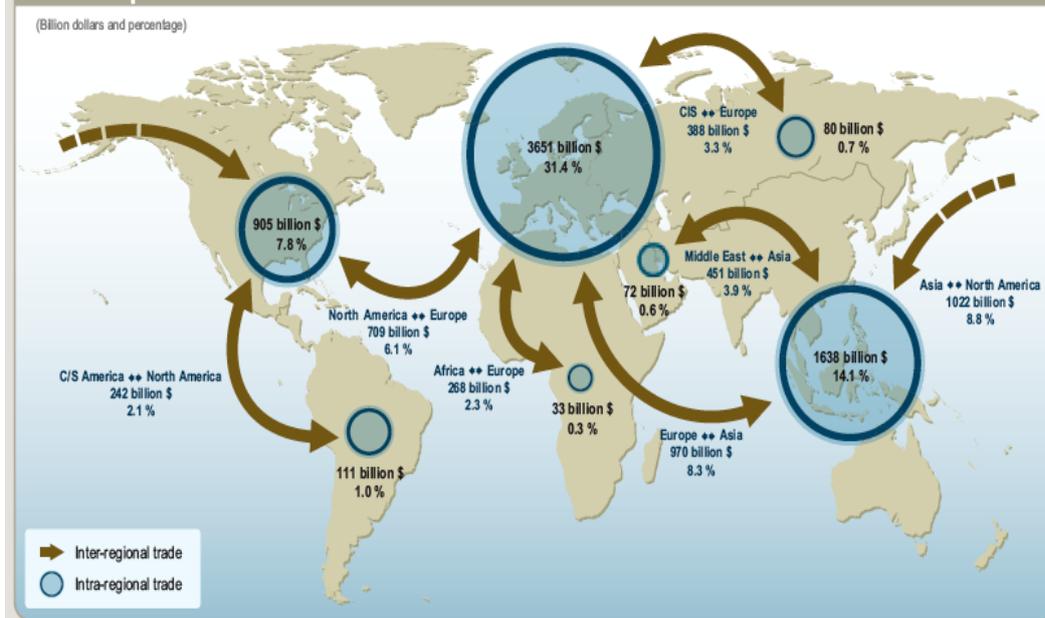
## WHO TRADE WITH WHOM?

### Shares of regional trade flows in world merchandise exports, 2009

(Percentage)

Origin	Destination	World	North America	South and Central America	Europe	CIS	Africa	Middle East	Asia
Share									
World		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
North America		13.2	37.9	29.3	5.7	3.0	7.2	9.7	10.1
South and Central America		3.8	5.7	27.4	1.8	1.9	3.3	2.2	3.0
Europe		41.2	18.1	17.1	70.9	47.1	41.5	30.1	13.3
CIS		3.7	1.2	1.2	4.7	27.9	1.8	2.8	2.0
Africa		3.2	3.2	2.1	2.9	0.4	11.5	2.3	2.7
Middle East		5.7	3.0	1.1	1.5	1.2	8.6	20.9	11.2
Asia		29.4	31.0	21.8	12.5	18.5	26.0	32.0	57.8

Chart I.4 Selected intra- and inter-regional merchandise trade flows, 2006

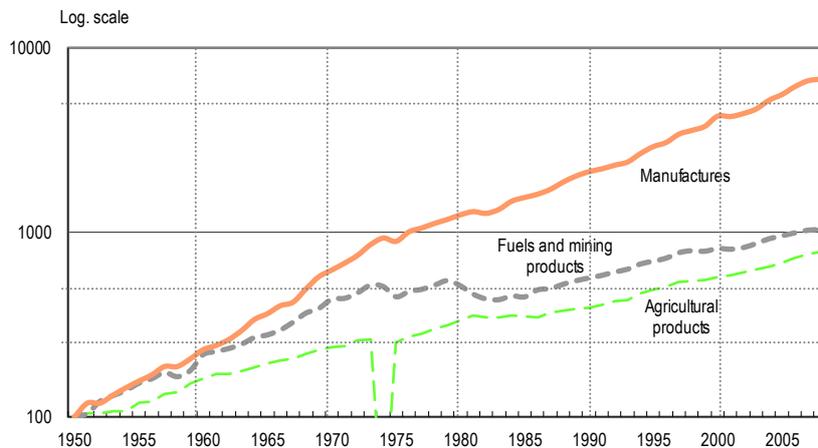


	1948	1953	1963	1973	1983	1993	2003	2009
	Value							
World	59	84	157	579	1838	3676	7376	12178
	Share							
World	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
North America	28.1	24.8	19.9	17.3	16.8	18.0	15.8	13.2
United States	21.7	18.8	14.9	12.3	11.2	12.6	9.8	8.7
Canada	5.5	5.2	4.3	4.6	4.2	3.9	3.7	2.6
Mexico	0.9	0.7	0.6	0.4	1.4	1.4	2.2	1.9
South and Central America	11.3	9.7	6.4	4.3	4.4	3.0	3.0	3.8
Brazil	2.0	1.8	0.9	1.1	1.2	1.0	1.0	1.3
Argentina	2.8	1.3	0.9	0.6	0.4	0.4	0.4	0.5
Europe	35.1	39.4	47.8	50.9	43.5	45.4	45.9	41.2
Germany a	1.4	5.3	9.3	11.7	9.2	10.3	10.2	9.2
France	3.4	4.8	5.2	6.3	5.2	6.0	5.3	4.0
Italy	1.8	1.8	3.2	3.8	4.0	4.6	4.1	3.3
United Kingdom	11.3	9.0	7.8	5.1	5.0	4.9	4.1	2.9
Commonwealth of Independent States (CIS) b	-	-	-	-	-	1.5	2.6	3.7
Africa	7.3	6.5	5.6	4.8	4.5	2.5	2.4	3.2
South Africa c	2.0	1.6	1.5	1.0	1.0	0.7	0.5	0.5
Middle East	1.9	2.7	3.2	4.1	6.8	3.5	4.1	5.7
Asia	14.0	13.4	12.5	14.9	19.1	26.1	26.2	29.4
China	0.9	1.2	1.3	1.0	1.2	2.5	5.9	9.9
Japan	0.4	1.5	3.5	6.4	8.0	9.9	6.4	4.8
India	2.2	1.3	1.0	0.5	0.5	0.6	0.8	1.3
Australia and New Zealand	3.7	3.2	2.4	2.1	1.4	1.4	1.2	1.5
Six East Asian Traders	3.4	3.0	2.5	3.6	5.8	9.7	9.6	9.6

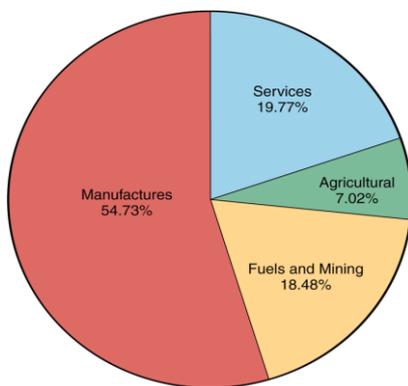
## CHANGING COMPOSITION OF TRADE

- What kinds of products do nations trade now, and how does this composition compare to trade in the past?
- Today, most (about 55%) of the volume of trade is in *manufactured products* such as automobiles, computers, clothing and machinery.
  - *Services* such as shipping, insurance, legal fees, and spending by tourists account for about 20% of the volume of trade.
  - *Mineral products* (ex., petroleum, coal, copper) and *agricultural products* are a relatively small part of trade.

## COMPOSITION OF TRADE



## THE COMPOSITION OF WORLD TRADE, 2008



## CHANGING COMPOSITION OF TRADE

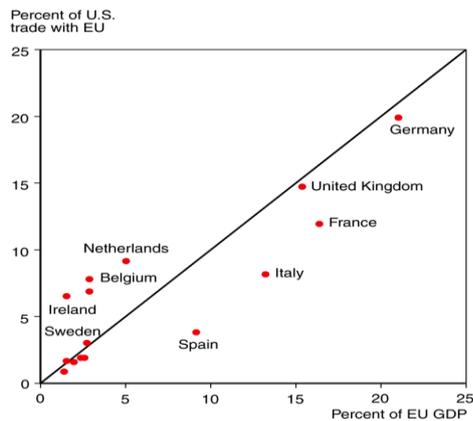
- In the past, a large fraction of the volume of trade came from agricultural and mineral products.
  - In 1910, Britain mainly imported agricultural and mineral products, although manufactured products still represented most of the volume of exports.
  - In 1910, the U.S. mainly imported and exported agricultural products and mineral products.
  - In 2002, manufactured products made up most of the volume of imports and exports for both countries.
- Low- and middle-income countries have also changed the composition of their trade.
  - In 2001, about 65% of exports from low- and middle-income countries were manufactured products, and only 10% of exports were agricultural products.
  - In 1960, about 58% of exports from low- and middle-income countries were agricultural products and only 12% of exports were manufactured products.

## SIZE MATTERS: THE GRAVITY MODEL

- The size of an economy is directly related to the volume of imports and exports.
  - Larger economies produce more goods and services, so they have more to sell in the export market.

- Larger economies generate more income from the goods and services sold, so they are able to buy more imports.
- Other things besides size matter for trade:
  - *Distance* between markets influences transportation costs and therefore the cost of imports and exports.
    - Distance may also influence personal contact and communication, which may influence trade.
  - *Cultural affinity*: if two countries have cultural ties, it is likely that they also have strong economic ties.
  - *Geography*: ocean harbors and a lack of mountain barriers make transportation and trade easier.
- *Multinational corporations*: corporations spread across different nations import and export many goods between their divisions.
- *Borders*: crossing borders involves formalities that take time and perhaps monetary costs like tariffs.
  - These implicit and explicit costs reduce trade.
  - The existence of borders may also indicate the existence of different languages (see 2) or different currencies, either of which may impede trade more.
- In its basic form, the gravity model assumes that only size and distance are important for trade in the following way:  $T_{ij} = A \times Y_i \times Y_j / D_{ij}$ , where
  - $T_{ij}$  is the value of trade between country  $i$  and country  $j$
  - $A$  is a constant
  - $Y_i$  the GDP of country  $i$
  - $Y_j$  is the GDP of country  $j$
  - $D_{ij}$  is the distance between country  $i$  and country  $j$

## THE SIZE OF EUROPEAN ECONOMIES, AND THE VALUE OF THEIR TRADE WITH THE UNITED STATES



## DISTANCE AND BORDERS

- Estimates of the effect of distance from the gravity model predict that a 1% increase in the distance between countries is associated with a decrease in the volume of trade of 0.7% to 1%.

## GLOBALIZATION HAS THE WORLD BECOME “SMALLER”?

- The negative effect of distance on trade according to the gravity models is significant, but has grown smaller over time due to modern transportation and communication.
- Technologies that have increased trade:
  - Wheels, sails, compasses, railroads, telegraph, steam power, automobiles, telephones, airplanes, computers, fax machines, Internet, fiber optics, personal digital assistants, GPS satellites...
- Political factors, such as wars, can change trade patterns much more than innovations in transportation and communication.
- World trade grew rapidly from 1870 to 1913.
  - Then it suffered a sharp decline due to the two world wars and the Great Depression.
  - It started to recover around 1945 but did not recover fully until around 1970.
- Since 1970, world trade as a fraction of world GDP has achieved unprecedented heights.

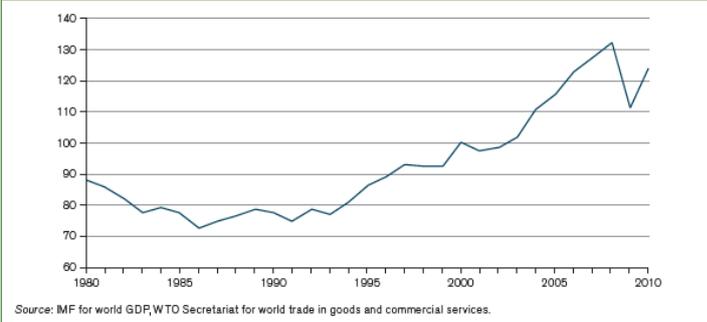
## WORLD EXPORTS AS A PERCENTAGE OF WORLD GDP

**TABLE 2-2** World Exports as a Percentage of World GDP

1870	4.6
1913	7.9
1950	5.5
1973	10.5
1998	17.2

**Source:** Angus Maddison, *The World Economy: A Millennial Perspective*, World Bank, 2001.

**Figure 3:** Ratio of world exports of goods and commercial services to GDP, 1980-2010 (Index, 2000 = 100)



## OPENNESS

- Nominator: total value of trade (f.i. average of exports and imports)
- Denominator: gdp = value added
- Global supply chains, defragmentation of production= aspect globalisation)
  - Every time an intermediary good crosses the border it is counted in the nominator
  - More defragmentation= more double counting

## COMPANY PERSPECTIVE

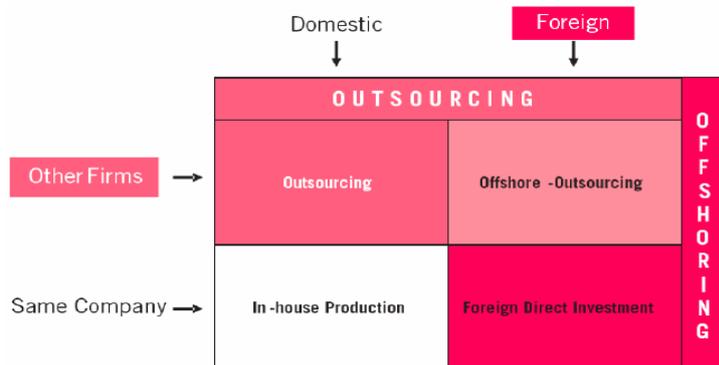


Table 1. The most expensive inputs in the 30GB 5th-generation iPod, 2005

Component	Supplier	Company HQ Location	Manufacturing Location	Estimated Factory Price	Cost as % of all iPod Parts	Gross Profit Rate	Est'd Value Capture
Hard Drive	Toshiba	Japan	China	\$73.39	51%	26.5%	\$19.45
Display Module	Toshiba-Matsushita	Japan	Japan	\$20.39	14%	28.7%	\$5.85
Video/Multimedia Processor	Broadcom	US	Taiwan or Singapore	\$8.36	6%	52.5%	\$4.39
Portal Player CPU	PortalPlayer	US	US or Taiwan	\$4.94	3%	44.8%	\$2.21
Insertion, test, and assembly	Inventec	Taiwan	China	\$3.70	3%	3.0%	\$0.11
Battery Pack	Unknown			\$2.89	2%		\$0.00
Display Driver	Renesas	Japan	Japan	\$2.88	2%	24.0%	\$0.69
Mobile SDRAM Memory - 32 MB	Samsung	Korea	Korea	\$2.37	2%	28.2%	\$0.67
Back Enclosure	Unknown			\$2.30	2%	26.5%	
Mainboard PCB	Unknown			\$1.90	1%	28.7%	
<b>Subtotal for 10 most expensive inputs</b>				<b>\$123.12</b>	<b>85%</b>		<b>\$33.37</b>
All other inputs				\$21.28	15%		
<b>Total all iPod inputs</b>				<b>\$144.40</b>	<b>100%</b>		

Source: Portelligent, Inc., 2006 and authors' calculations

Table 2. The geography of \$190 of the captured value in a single \$299 video iPod (very preliminary)

	U.S.	Japan	Korea	Total
Distribution and Retail	\$75			\$75
Apple	\$80			\$80
Seven Identified Inputs in Table 1	\$7	\$26	\$1	\$34
PortalPlayer suppliers	\$1*			\$1
<b>TOTAL</b>	<b>\$163</b>	<b>\$26</b>	<b>\$1</b>	<b>\$190</b>

Note: For this table it is assumed that the unit is sold in the U.S.

\* PortalPlayer suppliers could also be located in Taiwan.

Source: Authors' calculations

# CHAPTER 3: LABOR PRODUCTIVITY AND COMPARATIVE ADVANTAGE – THE RICARDIAN MODEL

## INTRODUCTION

- We will try to explain why free trade is a better solution than no trade at all.
  - Autarky: when country stick to itself and doesn't trade with another country.
  - We need to prove that international trade can improve the wealth of the people on a country.
- Theories of why trade occurs:
  - Differences across countries in labor, labor skills, physical capital, natural resources, and technology
  - Economies of scale (larger scale of production is more efficient)
- Sources of differences across countries that lead to gains from trade:
  - The Ricardian model (Chapter 3) examines differences in the *productivity of labor* (due to differences in *technology*) between countries. We assume there is only one factor of production.
    - This is labor. Everything is produced using labor.
  - The Heckscher-Ohlin model (Chapter 5) examines differences in *labor, labor skills, physical capital, land, or other factors of production* between countries. There is more than one factor of production:
    - The explanation of trade patterns is explained by factor proportions.
    - Proportions of labor versus capital.

## COMPARATIVE ADVANTAGE AND OPPORTUNITY COST

- The Ricardian model uses the concepts of *opportunity cost* and *comparative advantage*.
  - The opportunity cost of producing something measures the cost of not being able to produce something else with the resources used.
- For example, a limited number of workers could produce either roses or computers.
  - The opportunity cost of producing computers is the amount of roses not produced.
  - The opportunity cost of producing roses is the amount of computers not produced.
- Suppose that in the U.S. 10 million roses could be produced with the same resources that could produce 100,000 computers.
- Suppose that in Colombia 10 million roses could be produced with the same resources that could produce 30,000 computers.
- Workers in Columbia would be less productive than those in the U.S. in manufacturing computers.
- Colombia has a lower opportunity cost of producing roses.
  - Colombia can produce 10 million roses, compared to 30,000 computers that it could otherwise produce.
  - The U.S. can produce 10 million roses, compared to 100,000 computers that it could otherwise produce.
- The U.S. has a lower opportunity cost of producing computers.
  - Colombia can produce 30,000 computers, compared to 10 million roses that it could otherwise produce.

- The U.S. can produce 100,000 computers, compared to 10 million roses that it could otherwise produce.
- The U.S. can produce 30,000 computers, compared to 3.3 million roses that it could otherwise produce.
- A country has a **comparative advantage** in producing a good if the opportunity cost of producing that good is lower in the country than in other countries.
  - The U.S. has a comparative advantage in computer production.
  - Colombia has a comparative advantage in rose production.
- Suppose initially that Colombia produces computers and the U.S. produces roses, and that both countries want to consume computers and roses.
- Can both countries be made better off?

TABLE 3-1 Hypothetical Changes in Production		
	Million Roses	Thousand Computers
United States	- 10	+ 100
Colombia	+ 10	- 30
Total	0	+ 70

## COMPARATIVE ADVANTAGE AND TRADE

- When countries specialize in production in which they have a comparative advantage, more goods and services can be produced and consumed.
  - Have U.S. stop growing roses and use those resources to make 100,000 computers instead. Have Colombia stop making 30,000 computers and grow roses instead.
  - If they produce goods in which they have a comparative advantage (U.S. produces computers and Colombia roses), they could still consume the same 10 million roses, but could consume  $100,000 - 30,000 = 70,000$  more computers.

## ASSUMPTIONS ONE-FACTOR RICARDIAN MODEL

- Labor is the only factor of production.
- Labor productivity varies across countries due to differences in technology, but labor productivity in each country is constant.
- The supply of labor in each country is constant.
- Two goods: wine and cheese.
- Competition allows workers to be paid a “competitive” wage equal to the value of what they produce, and allows them to work in the industry that pays the highest wage.
- Two countries: home and foreign.

## A NUMERICAL EXAMPLE

	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.
- 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.
- With trade, the equilibrium relative price of cheese to wine (=terms of trade) settles between the two opportunity costs of cheese.
- Suppose that this 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 (from  $1/2$  to 1) in the home country and fall (from 2 to 1) in foreign.
- With trade, the foreign country can buy one pound of cheese for  $P_C/P_W =$  one gallon of wine
- Without trade foreign has to stop producing  $a^*_{LC}/a^*_{LW} = 2$  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
- With trade, the home country can buy one gallon of wine for  $P_W/P_C =$  one pound of cheese
- Without trade home has to stop production of  $a_{LW}/a_{LC} = 2$  pounds of cheese to free up enough labor to produce one gallon of wine in the absence of trade
- Suppose  $L = 1000$ . 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.

### ANOTHER EXAMPE (FROM THE ECONOMIST)

- East : 100 workers
  - 2 bikes or 4 bushels per year
- West : 100 workers
  - 1 bike or 1 bushel per year
    - East is more productive in both goods than the West. Both will benefit from trade!

<b>Autarky</b>	Wheat	Bicycles
East	200	100
West	50	50
<b>Total</b>	<b>250</b>	<b>150</b>

- East will specialize in wheat because it's more productive in wheat than it is in bicycles.
- West will specialize in bikes.
- After specialisation :
- *East shifts 10 workers from bikes to wheat*
- *West shifts 25 workers from wheat to bikes*

<b>Specialisation</b>	Wheat	Bicycles

East	240	80
West	25	75
<b>Total</b>	<b>265</b>	<b>155</b>

→ **production has increased!**

- terms of trade is set at
- 1,5 bushel per bike
- 33 bushels are traded for 22 bikes

<i>Trade</i>	Wheat	Bicycles
-----		
East	207	102
West	58	53
<b>Total</b>	<b>265</b>	<b>155</b>

→ **Both countries are better off!**

## GAINS FROM TRADE

- Gains from trade come from specializing in the type of production which uses resources most efficiently, and using the income generated from that production to buy the goods and services that countries desire.
  - where “using resources most efficiently” means producing a good in which a country has a comparative advantage.
- Domestic workers earn a higher income from cheese production because the relative price of cheese increases with trade.
- Foreign workers earn a higher income from wine production because the relative price of cheese decreases with trade (making cheese cheaper) and the relative price of wine increases with trade.
- Think of trade as an indirect method of production that converts cheese into wine or vice versa.
- Without trade, a country has to allocate resources to produce all of the goods that it wants to consume.
- With trade, a country can specialize its production and exchange for the mix of goods that it wants to consume.
- Consumption possibilities expand beyond the production possibility frontier when trade is allowed.
- With trade, consumption in each country is expanded because world production is expanded when each country specializes in producing the good in which it has a comparative advantage.

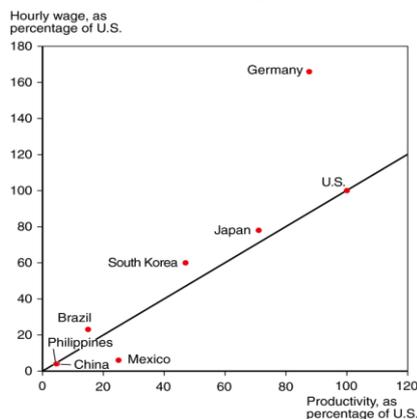
## RELATIVE WAGES

- **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.

- 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  $\$12/\$4 = 3$
- 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.
- 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.
  - Because foreign workers have a wage that is only 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.

## DO WAGES REFLECT PRODUCTIVITY?

- Do relative wages reflect relative productivities of the two countries?



- Evidence shows that low wages are associated with low productivity.
  - Wage of most countries relative to the U.S. is similar to their productivity relative to the U.S.
- Other evidence shows that wages rise as productivity rises.
  - As recently as 1975, wages in South Korea were only 5% of those of the United States.
  - As South Korea's labor productivity rose (to about half of the U.S. level by 2007), so did its wages (which were more than half of U.S. levels by 2007).

## MISCONCEPTIONS ABOUT COMPARATIVE ADVANTAGE

- 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.
- 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.
- Producers/workers benefit by earning a higher income in the industries that use resources more efficiently, allowing them to earn higher prices and wages.
- 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 (ex., 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.

## COMPARATIVE ADVANTAGE WITH MANY GOODS

- Same logic applies as in two goods model

Good	Home Unit Labor Requirement $a_{Li}$	Foreign Unit Labor Requirement ( $a_{Li}^*$ )	Relative Home Productivity Advantage ( $a_{Li}^*/a_{Li}$ )
Apples	1	10	10
Bananas	5	40	8
Caviar	3	12	4
Dates	6	12	2
Enchiladas	12	9	0.75

- If  $w/w^* = 3$ , the home country will produce apples, bananas, and caviar, while the foreign country will produce dates and enchiladas.

- The relative productivities of the home

country in producing apples, bananas, and caviar are higher than the relative wage.

- If each country specializes in goods that use resources productively and trades the products for those that it wants to consume, then each benefits.
  - If a country tries to produce all goods for itself, resources are “wasted”.
- The home country has high productivity in apples, bananas, and caviar that give it a cost advantage, despite its high wage.
- The foreign country has low wages that give it a cost advantage, despite its low productivity in date production.

## TRANSPORTATION COSTS AND NON-TRADED GOODS

- The Ricardian model predicts that countries completely specialize in production.
- But this rarely happens for three main reasons:
  - More than one factor of production reduces the tendency of specialization (Chapter 4).
  - Protectionism (Chapters 8–11).
  - Transportation costs reduce or prevent trade, which may cause each country to produce the same good or service.
- Nontraded goods and services (ex., haircuts and auto repairs) exist due to high transport costs.
  - Countries tend to spend a large fraction of national income on nontraded 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

**TABLE 3-3** China versus Germany, 1995

	Chinese Output per Worker as % of Germany	Total Chinese Output as % of Germany
All manufacturing	5.2	71.6
Apparel	19.7	802.2

**Source:** Ren Ruoan and Bai Manying, "China's Manufacturing Industry in an International Perspective: A China-Germany Comparison," *Economie internationale*, no. 92-2002/4, pp. 103-130.

- Compare Chinese output and productivity with that of Germany for various industries using 1995 data.
  - Chinese productivity (output per worker) was only 5 percent of Germany's on average.
- In apparel, Chinese productivity was about 20 percent of Germany's, creating a strong comparative advantage in apparel for China.
- The main implications of the Ricardian model are well supported by empirical evidence:
  - productivity differences play an important role in international trade
  - comparative advantage (not absolute advantage) matters for trade

# CHAPTER 5: RESOURCES AND TRADE – THE HECKSCHER-OHLIN MODEL

## INTRODUCTION

- In addition to differences in labor productivity, trade occurs due to differences in resources across countries.
- The Heckscher-Ohlin theory argues that trade occurs due to differences in labor, labor skills, physical capital, capital, or other factors of production across countries.
  - Concentrate on factor proportions.
  - Countries have different *relative abundance* of factors of production.
  - Production processes use factors of production with different *relative intensity*.
    - Low wages countries are more productive in labor intensive goods and countries with a high amount of capital are more productive in capital intensive goods.

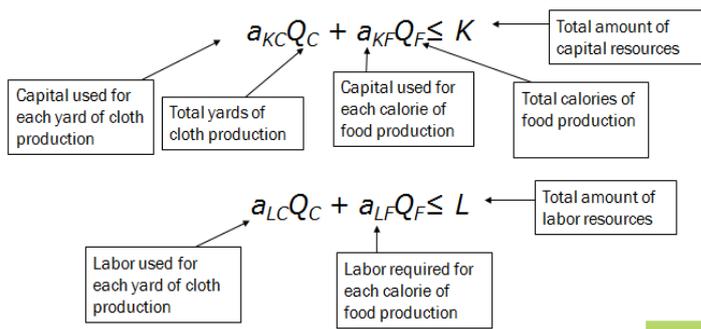
## TWO FACTOR HECKSCHER-OHLIN MODEL

- Two countries: home and foreign.
- Two goods: cloth and food.
- Two factors of production: labor and capital.
- The mix of labor and capital used varies across goods.
  - A car has a different mix of labor and capital than a chair.
- The supply of labor and capital in each country is constant and varies across countries.
  - Source of the comparative advantages.
- In the long run, both labor and capital can move across sectors, equalizing their returns (wage (=remuneration for labor) and rental rate (=remuneration for capital) across sectors.

## PRODUCTION POSSIBILITIES

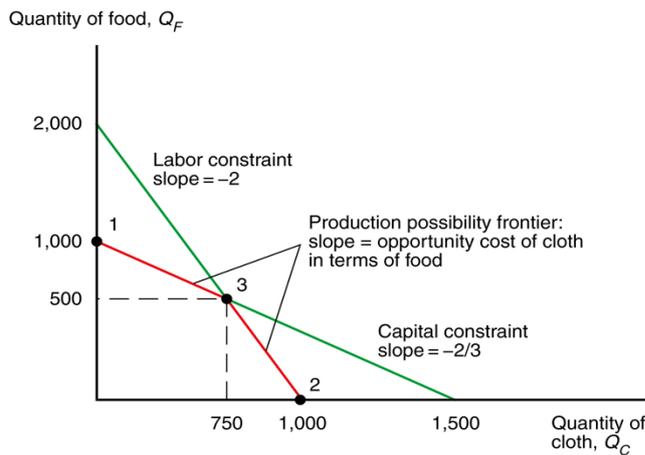
- With more than one factor of production, the opportunity cost in production is no longer constant and the PPF is no longer a straight line. Why?
- Numerical example:
  - $K = 3000$ , total amount of capital available for production
  - $L = 2000$ , total amount of labor available for production
- Suppose a fixed mix of capital and labor in each sector.
  - $a_{KC} = 2$ , capital used to produce one yard of cloth
  - $a_{LC} = 2$ , labor used to produce one yard of cloth
  - $a_{KF} = 3$ , capital used to produce one calorie of food
  - $a_{LF} = 1$ , labor used to produce one calorie of food

- Production possibilities are influenced by *both* capital and labor:



- Constraint on capital that capital used cannot exceed supply:
  - $2Q_C + 3Q_F \leq 3000$
- Constraint on labor that labor used cannot exceed labor supply:
  - $2Q_C + Q_F \leq 2000$
- Economy must produce subject to both constraints – i.e., it must have enough capital and labor.

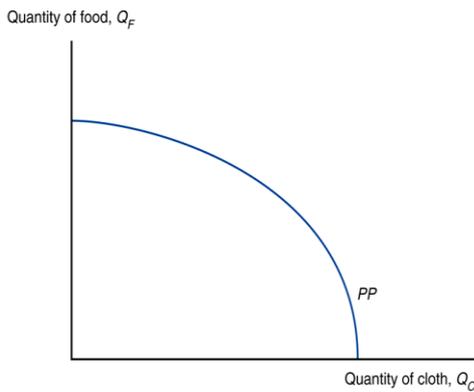
- Without factor substitution, the production possibilities frontier is the interior of the two factor constraints.



- Max food production 1000 (point 1) fully uses capital, with excess labor.
- Max cloth 1000 (point 2) fully uses labor, with excess capital.
- Intersection of labor and capital constraints occurs at 500 calories of food and 750 yards of cloth (point 3).
- The opportunity cost of producing one more yard of cloth, in terms of food, is not constant:

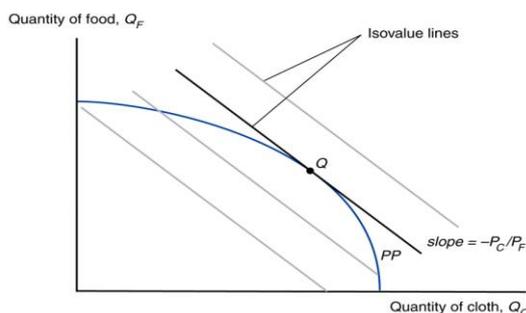
- low (2/3 in example) when the economy produces a *low amount of cloth* and a high amount of food
- high (2 in example) when the economy produces a *high amount of cloth* and a low amount of food

- Why? Because when the economy devotes more resources towards production of one good, the marginal productivity of those resources tends to be low so that the opportunity cost is high.



- The above PPF equations do not allow substitution of capital for labor in production.
  - Unit factor requirements are constant along each line segment of the PPF.
- If producers can substitute one input for another in the production process, then the PPF is curved (bowed).
  - Opportunity cost of cloth increases as producers make more cloth.
  - It's possible to produce outside the line if you trade.

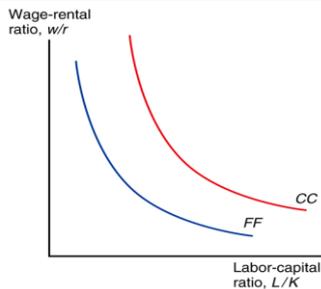
- What does the country produce?
- The economy produces at the point that maximizes the value of production,  $V$ .



- An **isovalue** line is a line representing a constant value of production,  $V$ :
  - $V = P_C Q_C + P_F Q_F$
  - where  $P_C$  and  $P_F$  are the prices of cloth and food.
  - slope of isovalue line is  $-(P_C/P_F)$

- Given the relative price of cloth, the economy produces at the point  $Q$  that touches the highest possible isovalue line.
- At that point, the relative price of cloth equals the slope of the PPF, which equals *the opportunity cost of producing cloth*.
  - The trade-off in production equals the trade-off according to market prices.

## CHOOSING THE MIX OF INPUTS

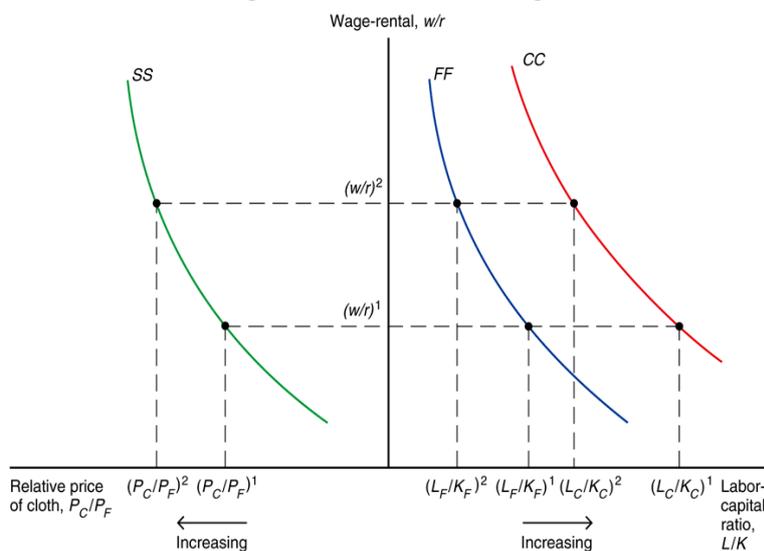


- Producers may choose different amounts of factors of production used to make cloth or food.
- Their choice depends on the costs of the factors of production: the wage,  $w$ , paid to labor and the rental rate,  $r$ , paid when renting capital.
- As the wage  $w$  increases relative to the rental rate  $r$ , producers use less labor and more capital in the production of both food and cloth.
- Assume that at any given (relative) factor prices, cloth production uses more labor relative to capital than food production uses:
  - $a_{LC}/a_{KC} > a_{LF}/a_{KF}$  or  $L_C/K_C > L_F/K_F$ 
    - Production of cloth is relatively labor intensive, while production of food is relatively capital intensive.
- Relative factor demand curve for cloth  $CC$  lies outside that for food  $FF$ .

## FACTOR PRICES AND GOODSPRICES



- In competitive markets, the price of a good should equal its cost of production (what you need in terms of capital and of labour), which depends on the factor prices.
  - Close relationship between the price of your production/output and the price of your input.
- How changes in the wage and rent affect the cost of producing a good depends on the mix of factors used.
  - An increase in the rental rate of capital should affect the price of food more than the price of cloth since food is the capital intensive industry.
- Changes in  $w/r$  are tied to changes in  $P_C/P_F$ .



- Stolper-Samuelson theorem:** If the relative price of a good increases, then the real wage or rental rate of the factor used intensively in the production of that good increases, while the real wage or rental rate of the other factor decreases.
  - Any change in the relative price of goods alters the distribution of income.
  - An increase in the relative price of cloth,  $P_C/P_F$ , is predicted to
    - raise income of workers relative to that of capital

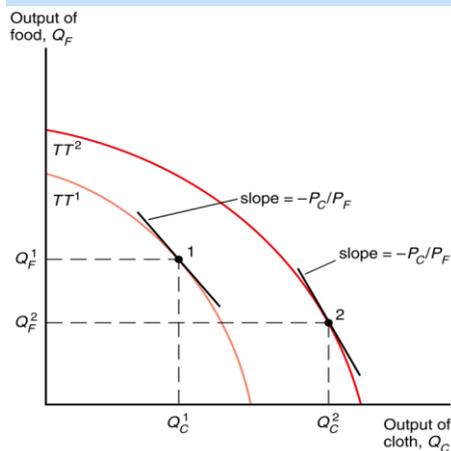
owners,  $w/r$ .

- raise the ratio of capital to labor services,  $K/L$  (*inverse of  $L/K$* ), used in both industries.
- raise the real income (purchasing power) of workers and *lower the real income of capital owners*.

➔ Why? If your ratio of Labor on Capital decreases, it means that if you decreases your inputs of some factor of production, the marginal product of that factor of production will increase. If you add one unit of labor, the marginal product of that labor is more than the previous extra unit. Or vice versa.

➔ What does it means for your wage and rental rate? Marginal product of labor increases -> wage rate and rental rate will also increase.

## RESOURCES AND OUTPUT



- Assume an economy's labor force grows, which implies that its ratio of labor to capital  $L/K$  increases. All the rest remains equal. This means you can produce more.

- Expansion of production possibilities is biased toward cloth. The increase of output of food is not similar to the increase of output of cloth. They produces a higher amount of cloth because it's cheaper.

- At a given relative price of cloth, the ratio of labor to capital used in both sectors remains constant. Because the relative price of cloths isn't change. That's why the slope of the curves should be the same.

- To employ the additional workers, the economy expands

production of the relatively labor-intensive good cloth and contracts production of the relatively capital-intensive good food.

- In the end we will have:
  - 2 countries: the one with relatively more labor, the other with relatively more capital.
  - 2 products: one uses relatively more labor, the other relatively more capital.
  - The comparative advantage will be that the labor intensive products will be made by the country which have a lot of labor and the capital intensive product will be made by the country which have a lot of capital.
- An economy with a high ratio of labor to capital produces a high output of cloth relative to food.
- Suppose that Home is **relatively abundant** in labor and Foreign in capital:
  - $L/K > L^*/K^*$
  - Likewise, Home is **relatively scarce** in capital and Foreign in labor.
- Home will be relatively efficient at producing cloth because cloth is relatively labor intensive.

## TRADE IN THE HECKSCHER-OHLIN MODEL

- The countries are assumed to have the same technology and the same tastes.
  - With the same technology, each economy has a comparative advantage in producing the good that relatively intensively uses the factors of production in which the country is relatively well endowed. If labor intensive in the one county, also labor intensive in the others. It's also made the same way.
  - With the same tastes, the two countries will consume cloth to food in the same ratio when faced with the same relative price of cloth under free trade.

- Since cloth is relatively labor intensive, at each relative price of cloth to food, Home will produce a higher ratio of cloth to food than Foreign.
  - Home will have a larger relative supply of cloth to food than Foreign.
  - Home's relative supply curve lies to the right of Foreign's.
- Like the Ricardian model, the Heckscher-Ohlin model predicts a convergence of relative prices with (international) trade.
- With trade, the relative price of cloth rises in the relatively labor abundant (home) country and falls in the relatively labor scarce (foreign) country.
  - ➔ Why? They need more labor so the wage-prices increases, while the capital-costs decreases in the home country. In the other country the opposite happens.
- Relative prices and the pattern of trade: In Home, the rise in the relative price of cloth leads to a rise in the relative production of cloth and a fall in relative consumption of cloth.
  - Home becomes an exporter of cloth and an importer of food.
- The decline in the relative price of cloth in Foreign leads it to become an importer of cloth and an exporter of food.
- **Heckscher-Ohlin theorem:** An economy has a comparative advantage in producing, and thus will export, goods that are relatively intensive in using its relatively abundant factors of production, and will import goods that are relatively intensive in using its relatively scarce factors of production.

## FACTOR PRICE EQUALIZATION

- Unlike the Ricardian model, the Heckscher-Ohlin model predicts that factor prices will be equalized (trend of equalization) among countries that trade.
- Free trade equalizes relative output prices.
- Due to the connection between output prices and factor prices, factor prices are also equalized.
  - E.g.: We had West-Germany and East-Germany before the fall of the Berlin Wall. There was not much trade going on between the two. You can put the two countries into a framework saying that, at the time, West-Germany was a country that relatively had more capital than labor. In East-Germany there was more labor than capital. West-Germany was good at producing capital intensive products (machines), while East-Germany had a comparative advantage in labor intensive products. When the Berlin Wall fell, you got some trade in that direction. Assuming the Heckscher-Ohlin model, the factors remain in the country where they were in the beginning -> but there was a factor flow! By trading them the wages get to a point where they are almost the same in both countries.

TABLE 5-1 Comparative International Wage Rates (United States = 100)	
Country	Hourly Compensation of Production Workers, 2005
United States	100
Germany	140
Japan	92
Spain	75
South Korea	57
Portugal	31
Mexico	11
China*	3

\*2004  
 Source: Bureau of Labor Statistics, *Foreign Labor Statistics Home Page*.

- Trade increases the demand of goods produced by relatively abundant factors, indirectly increasing the demand of these factors, raising the prices of the relatively abundant factors.

- In the real world, factor prices are not equal across countries, because of the assumptions of the model.

- The model assumes that

trading countries produce the same goods, but countries may produce different goods if their factor ratios radically differ.

- The model also assumes that trading countries have the same technology, but different technologies could affect the productivities of factors and therefore the wages/rates paid to these factors.
- The model also ignores trade barriers and transportation costs, which may prevent output prices and thus factor prices from equalizing.

- The model predicts outcomes for the long run, but after an economy liberalizes trade, factors of production may not quickly move to the industries that intensively use abundant factors.
  - In the short run, the productivity of factors will be determined by their use in their current industry, so that their wage/rental rate may vary across countries.

## TRADE AND INCOME DISTRIBUTION

- Changes in income distribution occur with every economic change, not only international trade.
  - Changes in technology, changes in consumer preferences, exhaustion of resources and discovery of new ones all affect income distribution.
  - Economists put most of the blame on technological change and the resulting premium paid on education as the major cause of increasing income inequality in the US.
- Labor is one factor of production, but you can assume that there are two factors of production in labor: highly-skilled labor and lowly-skilled labor.
  - ➔ In the rich countries: because of international trade and maybe more because of technology advantage: the highly-skilled labor is benefitting, while the lowly-skilled labors are losing their jobs, wages are low ...
- It would be better to compensate the losers from trade (or any economic change) than prohibit trade.
  - The economy as a whole does benefit from trade.
- There is a political bias in trade politics: potential losers (the companies) from trade are better politically organized than the winners from trade (the consumer). They protect the losing groups by set taxes, quotas ...
  - Losses are usually concentrated among a few, but gains are usually dispersed among many. The ones that gain, will always gain more than the losses of the ones that lose.
  - Each of you pays about \$8/year to restrict imports of sugar, and the total cost of this policy is about \$2 billion/year. You pay the taxes, that are used to subsidize the losers (protectionism).
  - The benefits of this program total about \$1 billion, but this amount goes to relatively few sugar producers.

## EMPIRICAL EVIDENCE ON THE HECKSCHER-OHLIN MODEL

TABLE 5-2 Factor Content of U.S. Exports and Imports for 1962		
	Imports	Exports
Capital per million dollars	\$2,132,000	\$1,876,000
Labor (person-years) per million dollars	119	131
Capital-labor ratio (dollars per worker)	\$17,916	\$14,321
Average years of education per worker	9.9	10.1
Proportion of engineers and scientists in work force	0.0189	0.0255

Source: Robert Baldwin, "Determinants of the Commodity Structure of U.S. Trade," *American Economic Review* 61 (March 1971), pp. 126-145.

- Tests on US data
  - Leontief found that U.S. exports were less capital-intensive than U.S. imports, even though the U.S. is the most capital-abundant country in the world: **Leontief paradox**.

➔ There is a difference between highly-skilled and lowly-skilled labor. You should not look at labor as one homogeneous factor of production -> Average years of education are higher for exports than imports.

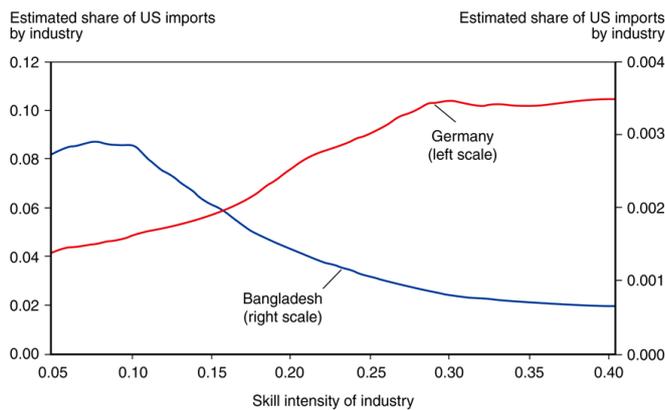
**TABLE 5-3 Testing the Heckscher-Ohlin Model**

Factor of Production	Predictive Success*
Capital	0.52
Labor	0.67
Professional workers	0.78
Managerial workers	0.22
Clerical workers	0.59
Sales workers	0.67
Service workers	0.67
Agricultural workers	0.63
Production workers	0.70
Arable land	0.70
Pasture land	0.52
Forest	0.70

\*Fraction of countries for which net exports of factor runs in predicted direction.

**Source:** Harry P. Bowen, Edward E. Leamer, and Leo Sveikauskas, "Multicountry, Multifactor Tests of the Factor Abundance Theory," *American Economic Review* 77 (December 1987), pp. 791–809.

- Tests on global data
  - Bowen, Leamer, and Sveikauskas tested the Heckscher-Ohlin model on data from 27 countries and confirmed the Leontief paradox on an international level.
    - ➔ Looked at more than 2 factors of production.
    - ➔ It's true for 52% of the countries that they export more capital intensive products.



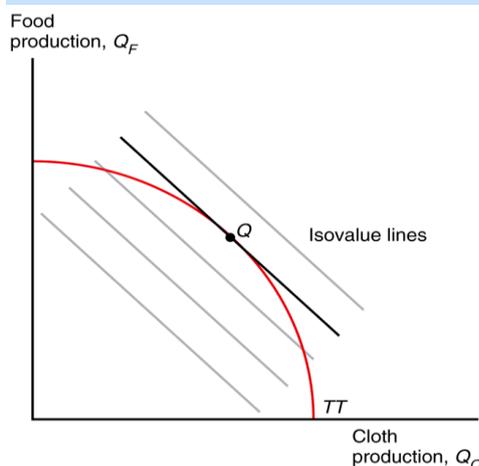
- Looking at changes in patterns of exports between developed (high income) and developing (low/middle income) countries supports the theory.
  - US imports from Bangladesh are highest in low-skill-intensity industries, while US imports from Germany are highest in high-skill-intensity industries.

# CHAPTER 6: THE STANDARD TRADE MODEL

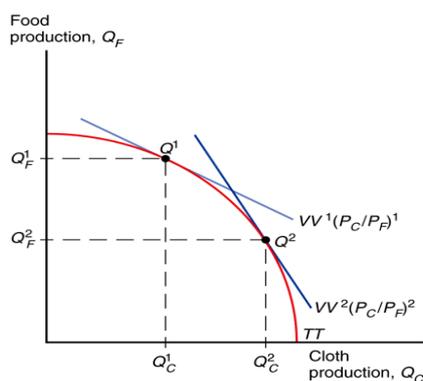
## INTRODUCTION

- Standard trade model is a general model that includes Ricardian, specific factors, and Heckscher-Ohlin models as special cases.
  - Two goods, food (F) and cloth (C).
  - Each country's PPF (production possibility function) is a smooth curve.
  - Differences in *labor services, labor skills, physical capital, land, and technology* between countries cause differences in production possibility frontiers.
  - A country's PPF determines its relative supply function.
  - National relative supply functions determine a world relative supply function, which along with world relative demand determines the equilibrium under international trade.

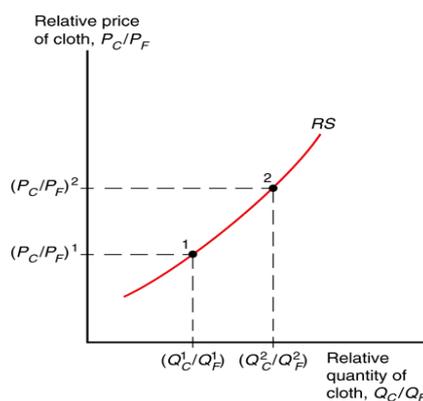
## PRODUCTION POSSIBILITIES AND RELATIVE SUPPLY



- What a country produces depends on the relative price of cloth to food  $P_C/P_F$ .
  - An economy chooses its production of cloth  $Q_C$  and food  $Q_F$  to maximize the value of its output  $V = P_C Q_C + P_F Q_F$ , given the prices of cloth and food.
    - The slope of an isovalue line equals  $-(P_C/P_F)$
    - Produce at point where PPF is tangent to isovalue line.



(a)



(b)

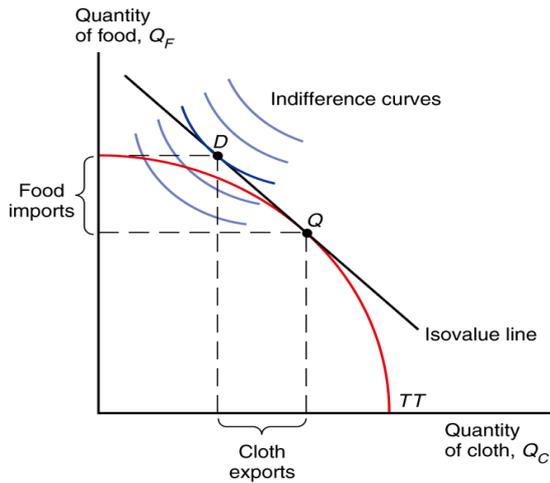
- Relative prices and relative supply:
  - An increase in the price of cloth relative to food  $P_C/P_F$  makes the isovalue line steeper.
  - Production shifts from point  $Q^1$  to point  $Q^2$ .
  - Supply of cloth relative to food  $Q_C/Q_F$  rises.

- If you can't trade with someone else than you can only buy what is produced in your own country.
- Relative supply of cloth to food increases with the relative price of cloth to food.

## RELATIVE PRICES AND DEMAND

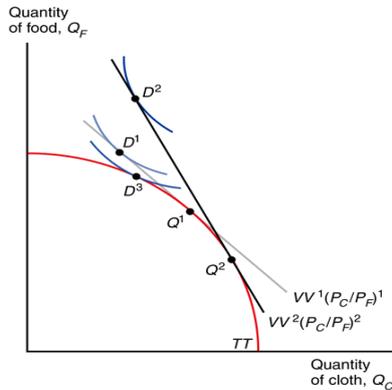
- The value of the economy's consumption must equal the value of the economy's production.
  - $P_C D_C + P_F D_F = P_C Q_C + P_F Q_F = V$

- Assume that the economy's consumption decisions may be represented as if they were based on the tastes of a single representative consumer.

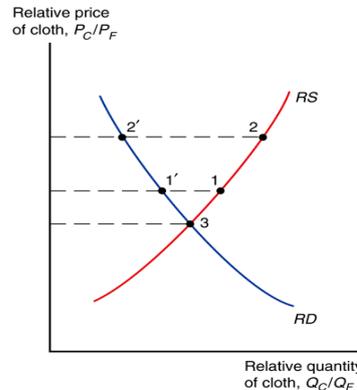


- An **indifference curve** represents combinations of cloth and food that leave the consumer equally well off (indifferent).
- Indifference curves
  - are downward sloping – if you have less cloth, then you must have more food to be equally satisfied.
  - that lie farther from the origin make consumers more satisfied – they prefer having more of both goods.
  - become flatter when they move to the right – with more cloth and less food, an extra yard of cloth becomes less valuable in terms of how many calories

of food you are willing to give up for it.



(a) Production and Consumption



(b) Relative Supply and Demand

- Consumption choice is based on preferences and relative price of goods:

- Consume at point  $D$  where the isovalue line is tangent to the indifference curve.

- Economy exports cloth – the quantity of cloth produced exceeds the quantity of cloth consumed – and imports food.

- Relative prices and relative demand

- An increase in the relative price of cloth  $P_C/P_F$  causes consumption choice to shift from point  $D^1$  to point  $D^2$ .
- Demand for cloth relative to food  $D_C/D_F$  falls.
- Relative demand for cloth to food falls as the relative price of cloth to food rises.
- An economy that exports cloth is better off when the price of cloth rises relative to the price of food:
  - the isovalue line becomes steeper and a higher indifference curve can be reached.
- A higher relative price of cloth means that more calories of food can be imported for every yard of cloth exported.
- If the economy cannot trade:
  - The relative price of cloth to food is determined by the intersection of relative demand and relative supply for that country.
  - Consume and produce at point  $D^3$  where the indifference curve is tangent to the production possibilities frontier.

# CHAPTER 7: EXTERNAL ECONOMIES OF SCALE AND THE INTERNATIONAL LOCATION OF PRODUCTION

## INTRODUCTION

- The models of comparative advantage thus far assumed **constant returns to scale** (the average cost was the same if you produce a little or if you produce a lot):
  - When inputs to an industry increase at a certain rate, output increases at the same rate.
  - If inputs were doubled, output would double as well.

Output	Total Labor Input	Average Labor Input
5	10	2
10	15	1.5
15	20	1.333333
20	25	1.25
25	30	1.2
30	35	1.166667

- But there may be **increasing returns to scale** or **economies of scale**:
  - This means that when inputs to an industry increase at a certain rate, output increases at a faster rate.
  - A larger scale is more efficient: the cost per unit of output falls as a firm or industry increases output.

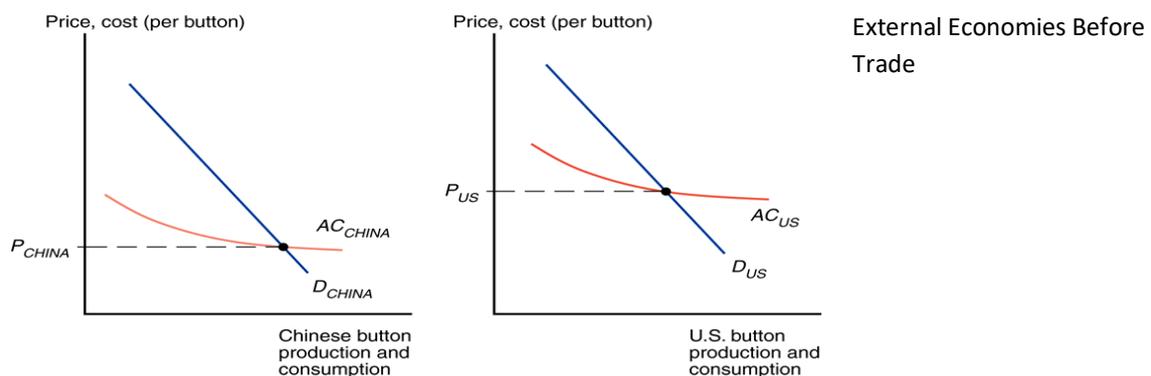
- Mutually beneficial trade can arise as a result of economies of scale.
- International trade permits each country to produce a limited range of goods without sacrificing variety in consumption.
- With trade, a country can take advantage of economies of scale to produce more efficiently than if it tried to produce everything for itself.

## ECONOMIES OF SCALE AND MARKET STRUCTURE

- Economies of scale could mean either that larger firms or a larger industry would be more efficient.
- 2 types of economies of scale:
  - **External economies of scale** occur when cost per unit of output depends on the *size of the industry*.
    - You can have 100 small companies in the sector you have an average cost. If you have 200 companies of the same size, the average cost could decrease, because you have to look to the inputs of all the companies. The market gets bigger, so they could sell to lower prices.
  - **Internal economies of scale** occur when the cost per unit of output depends on the *size of a firm*.
    - If you are a big firm, you can pressure your suppliers.
- ➔ Both external and internal economies of scale are important causes of international trade.
- They have different implications for the structure of industries:
  - An industry where economies of scale are purely external will typically consist of many small firms and be perfectly competitive.
  - Internal economies of scale result when large firms have a cost advantage over small firms, causing the industry to become imperfectly competitive.

## THE THEORY OF EXTERNAL ECONOMIES

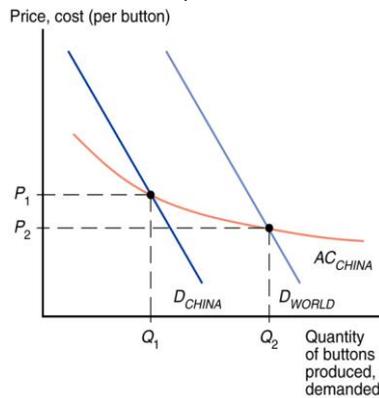
- This chapter deals with a model of external economies; the next chapter will cover internal economies.
- Many modern examples of industries that seem to be powerful external economies:
  - In the United States, the semiconductor industry is concentrated in Silicon Valley (software industry ...), investment banking in New York, and the entertainment industry in Hollywood.
- In developing countries such as China, external economies are pervasive in manufacturing.
  - One town in China produces most of the world's underwear, another nearly all cigarette lighters.
- External economies played a key role in India's emergence as a major exporter of information services.
  - Indian information services companies are still clustered in Bangalore.
- For a variety of reasons, concentrating production of an industry in one or a few locations can reduce the industry's costs, even if the individual firms in the industry remain small.
- External economies may exist for a few reasons:
  - **Specialized equipment or services** may be needed for the industry, but are only supplied by other firms if the industry is large and concentrated.
    - For example, Silicon Valley in California has a large concentration of silicon chip companies, which are serviced by companies that make special machines for manufacturing silicon chips.
    - These machines are cheaper and more easily available there than elsewhere.
  - **Labor pooling**: a large and concentrated industry may attract a pool of workers, reducing employee search and hiring costs for each firm.
    - In Silicon Valley there are a lot of high-skilled workers.
  - **Knowledge spillovers**: workers from different firms may more easily share ideas that benefit each firm when a large and concentrated industry exists.
- Represent external economies simply by assuming that the larger the industry, the lower the industry's costs.
- There is a **forward-falling supply curve**: the larger the industry's output, the lower the price at which firms are willing to sell.
- Without international trade, the unusual slope of the supply curve doesn't matter much



## EXTERNAL ECONOMIES AND INTERNATIONAL TRADE

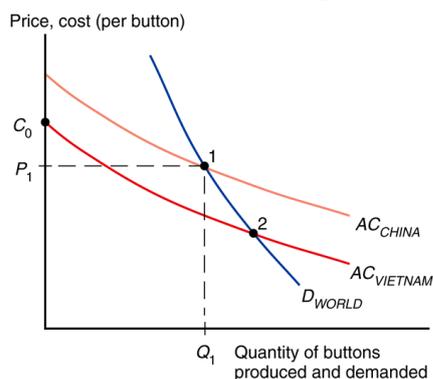
- What will happen when the countries open up the potential for trade in buttons?
- The Chinese button industry will expand, while the U.S. button industry will contract.

- This process feeds on itself: As the Chinese industry's output rises, its costs will fall further; as the U.S. industry's output falls, its costs will rise.
- In the end, all button production will be in China.
- How does this concentration of production affect prices?
- Chinese button prices were lower than U.S. button prices before trade.
- Because China's supply curve is forward-falling, increased production as a result of trade leads to a button price that is lower than the price before trade.



- Trade leads to prices that are lower than the prices in either country before trade!
  - Very different from the implications of models without increasing returns.
  - In the standard trade model relative prices converge as a result of trade.
  - If cloth is relatively cheap in the home country and relatively expensive in the foreign country before trade opens, the effect of trade was to raise cloth prices in Home and reduce them in Foreign.
- With external economies, by contrast, the effect of trade is to reduce prices everywhere.

- What might cause one country to have an initial advantage from having a lower price?
- One possibility is comparative advantage due to underlying differences in technology and resources.
- If external economies exist, however, the pattern of trade could be due to historical accidents:
  - Countries that start as large producers in certain industries tend to remain large producers even if another country could potentially produce more cheaply.
- A tufted blanket, crafted as a wedding gift by a 19th-century teenager, gave rise to the cluster of carpet manufacturers around Dalton, Georgia.
- Silicon Valley may owe its existence to two Stanford graduates named Hewlett and Packard who started a business in a garage there.
- Assume that the Vietnamese cost curve lies below the Chinese curve because Vietnamese wages are lower than Chinese wages.

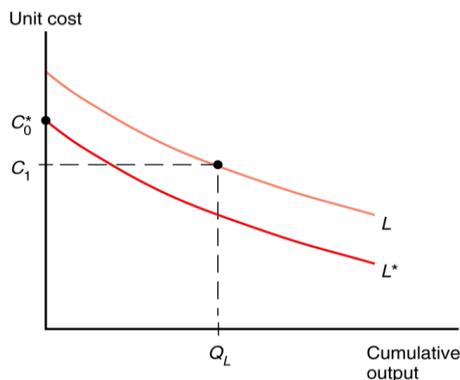


- At any given level of production, Vietnam could manufacture buttons more cheaply than China.
- One might hope that this would always imply that Vietnam will in fact supply the world market.
- But this need not always be the case if China has enough of a head start.
- No guarantee that the right country will produce a good that is subject to external economies.
- Trade based on external economies has an ambiguous effect on national welfare.
  - There will be gains to the world economy by concentrating production of industries with external economies.
  - It's possible that a country is worse off with trade than it would have been without trade: a country may be better off if it produces everything for its domestic market rather than pay for imports.
- Note that it's still to the benefit of the world economy to take advantage of the gains from concentrating industries.
- Each country wanting to reap the benefits of housing an industry with economies of scale creates trade conflicts.

- Overall, it's better for the world that each industry with external economies be concentrated *somewhere*.

## DYNAMIC INCREASING RETURNS

- So far, we have considered cases where external economies depend on the amount of *current output* at a point in time.
- But external economies may also depend on the amount of *cumulative output over time*.
- **Dynamic increasing returns to scale** exist if average costs fall as cumulative output over time rises.
  - Dynamic increasing returns to scale imply dynamic external economies of scale.
- Dynamic increasing returns to scale could arise if the cost of production depends on the accumulation of knowledge and experience, which depend on the production process over time.



- A graphical representation of dynamic increasing returns to scale is called a **learning curve**: The average cost is lower if you produce more of the same
- Like external economies of scale at a point in time, dynamic increasing returns to scale can lock in an initial advantage or a head start in an industry.
- Can also be used to justify protectionism.
  - Temporary protection of industries enables them to gain experience: **infant industry argument**.
  - But temporary is often for a long time, and it is hard to identify when external economies of scale really exist.
- Protectionism is bad for the welfare of the people and free trade is good. But here you have a situation you have an argument for protection: If you have China and Vietnam, Vietnam has an advantage (cost advantage, don't know if it's a comparative advantage). Vietnam is an beginning industry, while China already has enough experience so has an advantage. Why for protection? Infant industry. How long should we protect? Until the same size is reached.

## INTERNATIONAL TRADE AND ECONOMIC GEOGRAPHY

**TABLE 7-2** Some Examples of Tradable and Nontradable Industries

Tradable Industries	Nontradable Industries
Motion pictures	Newspaper publishers
Securities, commodities, etc.	Savings institutions
Scientific research	Veterinary services

**Source:** J. Bradford Jensen and Lori G. Kletzer, "Tradable Services: Understanding the Scope and Impact of Services Outsourcing," in Lael Brainard and Susan M. Collins, eds., *Brookings Trade Forum 2005: Offshoring White Collar Work* (Washington, D.C.: Brookings Institution, 2005), pp. 75–116.

- External economies may also be important for **interregional trade** within a country.
  - Many movie producers located in Los Angeles produce movies for consumers throughout the U.S.
  - Many financial firms located in New York provide financial

services for consumers throughout the U.S.

- Some nontradable goods like veterinary services must usually be supplied locally.
- If external economies exist, the pattern of trade may be due to historical accidents:
  - Regions that start as large producers in certain industries tend to remain large producers even if another region could potentially produce more cheaply.
- More broadly, **economic geography** refers to the study of international trade, interregional trade and the organization of economic activity in metropolitan and rural areas.
  - Economic geography studies how humans transact with each other across space.

- Communication changes such as the Internet, e-mail, text mail, video conferencing, mobile phones (as well as modern transportation) are changing how humans transact with each other across space.

# CHAPTER 8: FIRMS IN THE GLOBAL ECONOMY – INTERNAL ECONOMIES OF SCALE

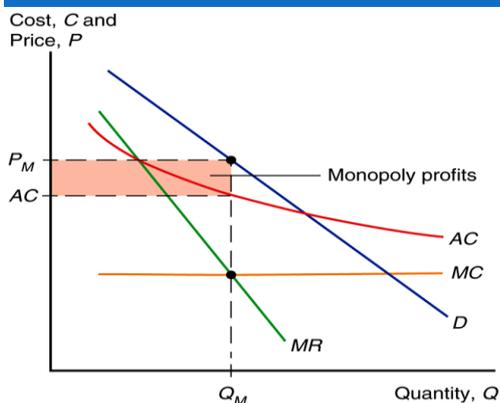
## INTRODUCTION

- When economies of scale exist, large firms may be more efficient than small firms, and the industry may consist of a monopoly or a few large firms.
  - Production may be imperfectly competitive in the sense that excess or monopoly profits are captured by large firms.
- Internal economies of scale result when large firms have a cost advantage over small firms, causing the industry to become uncompetitive.
- Internal economies of scale imply that a firm's average cost of production decreases the more output it produces.
- Perfect competition that drives the price of a good down to marginal cost would imply losses for those firms because they would not be able to recover the higher costs incurred from producing the initial units of output.
- As a result, perfect competition would force those firms out of the market.
- In most sectors, goods are differentiated from each other and there are other differences across firms.
- Integration causes the better-performing firms to thrive and expand, while the worse-performing firms contract.
- Additional source of gain from trade: As production is concentrated toward better-performing firms, the overall efficiency of the industry improves.
- Study why those better-performing firms have a greater incentive to engage in the global economy.

## THE THEORY OF IMPERFECT COMPETITION

- In imperfect competition, firms are aware that they can influence the prices of their products and that they can sell more only by reducing their price.
- This situation occurs when there are only a few major producers of a particular good or when each firm produces a good that is differentiated from that of rival firms.
- Each firm views itself as a price setter, choosing the price of its product.

## MONOPOLY: A BRIEF REVIEW

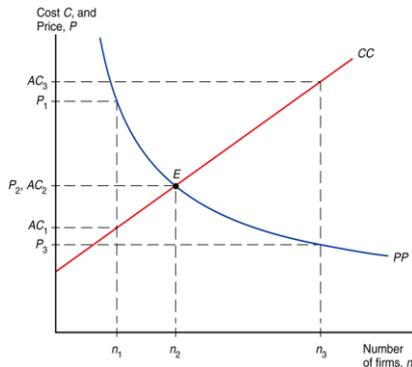


- A **monopoly** is an industry with only one firm.
- An **oligopoly** is an industry with only a few firms.
- In these industries, the marginal revenue generated from selling more products is less than the uniform price charged for each product.
  - To sell more, a firm must lower the price of all units, not just the additional ones.
  - The marginal revenue function therefore lies below the demand function (which determines the price that customers are willing to pay).
- The profit-maximizing output occurs where marginal revenue equals marginal cost.

- At the intersection of the  $MC$  and  $MR$  curves, the revenue gained from selling an extra unit equals the cost of producing that unit.
- The monopolist earns some monopoly profits, as indicated by the shaded box, when  $P > AC$ .

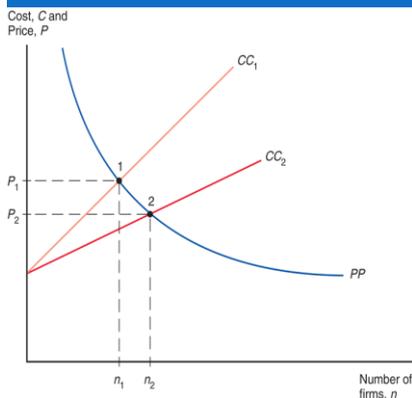
## MONOPOLISTIC COMPETITION BEFORE TRADE

- **Monopolistic competition** is a simple model of an imperfectly competitive industry that assumes that each firm
  - can differentiate its product from the product of competitors, and
  - takes the prices charged by its rivals as given.

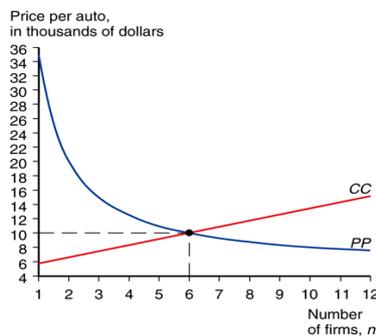


- Two relationships between number of firms and prices they charge:
  - The more firms, the more competition, the lower the price (PP in next graph)
  - The more firms, the less each firm sells, the higher average cost (CC)
- If price > average cost, new entries
- If price < average cost, exits
- Equilibrium in E

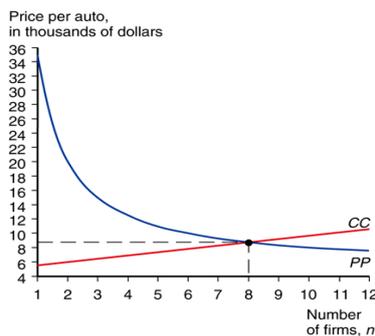
## MONOPOLISTIC COMPETITION AND TRADE



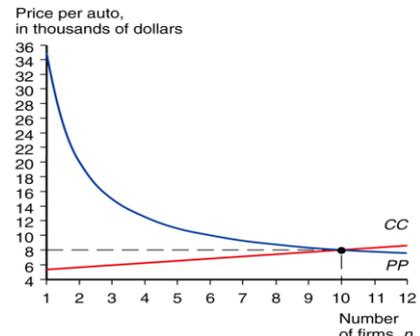
- Because trade increases market size, trade is predicted to decrease average cost in an industry described by monopolistic competition.
  - Industry sales increase with trade leading to decreased average costs
- Because trade increases the variety of goods that consumers can buy under monopolistic competition, it increases the welfare of consumers.
  - And because average costs decrease, consumers can also benefit from a decreased price.



(a) Home



(b) Foreign



(c) Integrated

- As a result of trade, the number of firms in a new international industry is predicted to increase relative to each national market.
  - But it is unclear if firms will locate in the domestic country or foreign countries.
- Integrating markets through international trade therefore has the same effects as growth of a market within a single country.

TABLE 8-1 Hypothetical Example of Gains from Market Integration			
	Home Market, Before Trade	Foreign Market, Before Trade	Integrated Market, After Trade
Industry output (# of autos)	900,000	1,600,000	2,500,000
Number of firms	6	8	10
Output per firm (# of autos)	150,000	200,000	250,000
Average cost	\$10,000	\$8,750	\$8,000
Price	\$10,000	\$8,750	\$8,000

- Product differentiation and internal economies of scale lead to trade between similar countries with no comparative advantage differences between them.
  - This is a very different kind of trade than the one based on comparative advantage, where each country exports its comparative advantage good.

## THE SIGNIFICANCE OF INTRA-INDUSTRY TRADE

- **Intra-industry trade** refers to two-way exchanges of similar goods.
  - ≠ Inter-industry trade = trade of goods belonging to different industries.
- Two new channels for welfare benefits from trade:
  - Benefit from a greater variety at a lower price.
  - Firms consolidate their production and take advantage of economies of scale.
- A smaller country stands to gain more from integration than a larger country.
- About 25–50% of world trade is intra-industry.
- Most prominent is the trade of manufactured goods among advanced industrial nations, which accounts for the majority of world trade.
  - Measure
  - $I = 1 - (\sum |X_i/X - M_i/M|) / (\sum (X_i/X + M_i/M))$ 
    - If  $I = 0$ : perfect inter-industrial trade
    - If  $I = 1$ : perfect intra-industrial trade
- Example

Goods category	Export	Import
W	500	200
X	200	400
Y	100	400
Total	800	1000

- $I = 1 - (|500/800 - 200/1000| + |200/800 - 400/1000| + |100/800 - 400/1000|) / (|500/800 + 200/1000| + |200/800 + 400/1000| + |100/800 + 400/1000|)$
- = 0,575
- Other examples

Goods category	Export2	Import2	Export3	Import3
W	500	500	500	0
X	200	200	300	0
Y	100	100	0	800
Total	800	800	800	800

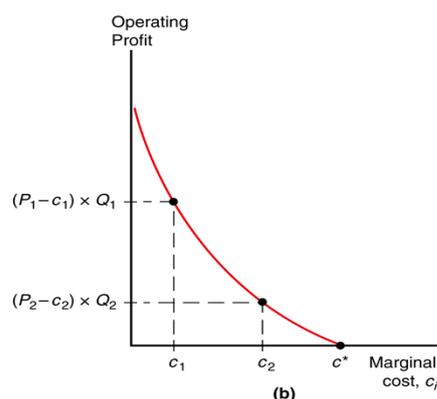
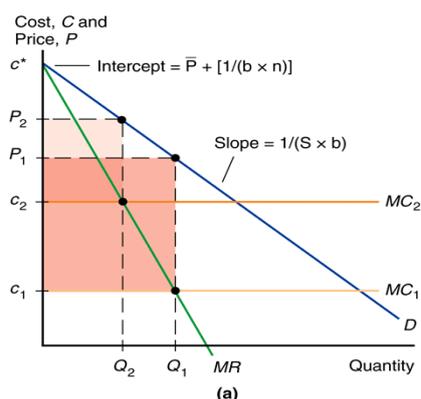
- Case2:  $I = 1 - 0 = 1$  totally intra
- Case 3:  $I = 1 - 1 = 0$  totally inter

**TABLE 8-2 Indexes of Intra-Industry Trade for U.S. Industries, 2009**

Metalworking Machinery	0.97
Inorganic Chemicals	0.97
Power-Generating Machines	0.86
Medical and Pharmaceutical Products	0.85
Scientific Equipment	0.84
Organic Chemicals	0.79
Iron and Steel	0.76
Road Vehicles	0.70
Office Machines	0.58
Telecommunications Equipment	0.46
Furniture	0.30
Clothing and Apparel	0.11
Footwear	0.10

## FIRM RESPONSES TO TRADE

- Increased competition tends to hurt the worst-performing firms — they are forced to exit.
- The best-performing firms take the greatest advantage of new sales opportunities and expand the most.
- When the better-performing firms expand and the worse-performing ones contract or exit, overall industry performance improves.
  - Trade and economic integration improve industry performance as much as the discovery of a better technology does.



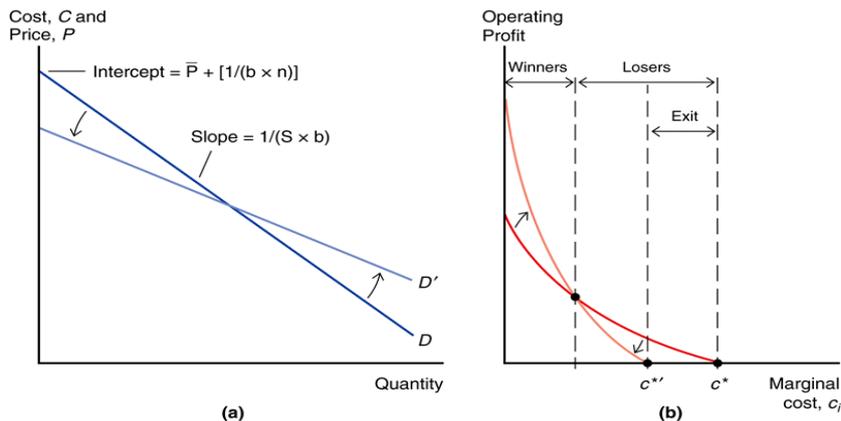
On the left-side: We have a demand curve and a marginal revenue (drops twice as fast as the demand curve). If you have 2 companies facing the same demand curve, the companies now have different marginal costs. Company 1 can produce a lower marginal cost.

### → Effects?

- Company 1 will produce a quantity of  $Q_1$  and will put a price of  $P_1$  to that quantity. The operating profit is larger. They are more efficient. The mark-up that company 1 could ask for his product is much larger.
- Company 2 has a higher marginal cost, which leads to another optimization with a quantity of  $Q_2$  and a price  $P_2$  and with another, smaller operating profit.

On the right-side: how lower the quantity on the left-side, the lower your profit will be.

$C^*$  is the cut-off point: you can't go above this marginal costs, or you're not longer in the market. If your marginal cost are  $C^*$ , you would sell nothing and it would be better if you exit the market.



- What happens if you introduce trade: Integration/international trade has an impact on the demand curve.

At the left-side: international trade:

- will make the demand curve flatter

→ Why?

When you are competing as a company in a bigger market, you should be more careful not to lose customers in case that you increase your price. If you increase your price after trade, the change that customers will leave you is bigger than before trade. Your demand is more elastic.

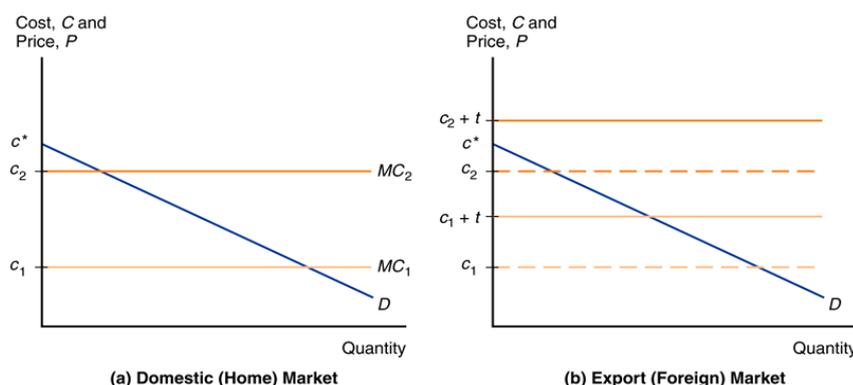
- and it will start at a lower point on the vertical axes.  
→ Why? The new marginal costs will be lower in a bigger market

At the right-side: effects:

- Exit: All the least efficient companies that were in the market before trade, will be forced out of the market after trade.
- Winners and losers: The companies who stay in the market are profitable, but not in an equal way. Some will become more profitable (the bigger companies that are in the lower regions of marginal costs) and others become less profitable.

## TRADE COSTS AND EXPORT DECISIONS

- What? Cost that are involved in going abroad with your production. Trying to sell abroad will cost you more than staying at home.
- Trade costs added two important predictions to our model of monopolistic competition and trade:
  - Why only a subset of firms export, and why exporters are relatively larger and more productive (lower marginal costs).
- Overwhelming empirical support for this prediction that exporting firms are bigger and more productive than firms in the same industry that do not export.
  - In the United States, in a typical manufacturing industry, an exporting firm is on average more than twice as large as a firm that does not export.
  - Differences between exporters and non exporters are even larger in many European countries.



On the left you see the marginal costs when only delivering to your home market. On the right you export your products. T is the trade cost. This means that if you want to be active in the foreign market, your marginal cost will go up by the trade

cost. For company 2, the marginal cost that include the trade cost, is above the cut-off point.

## DUMPING

- There is a difference between the cost in the 2 markets. -> Separate markets -> strategy of price discrimination.
- **Dumping** is the practice of charging a lower price for exported goods than for goods sold domestically.
  - E.g. Chinese solar panels were dumped on the European market. The next step for European producers is going to their governments and asking for taxes on the import of the cheap solar systems to make a fair playfield.
- Dumping is an example of **price discrimination**: the practice of charging different customers different prices.
  - Here the segments (customers) are: home market and foreign market. Only possible if there is no arbitrage possible between the markets.
- Price discrimination and dumping may occur only if
  - *imperfect competition* exists: firms are able to influence market prices.
  - *markets are segmented* so that goods are not easily bought in one market and resold in another.
- Dumping can be a profit-maximizing strategy:
  - An exporting firm will respond to the trade cost by lowering its markup for the export market.
  - This strategy is considered to be **dumping**, regarded by most countries as an “unfair” trade practice.

## PROTECTIONISM AND DUMPING

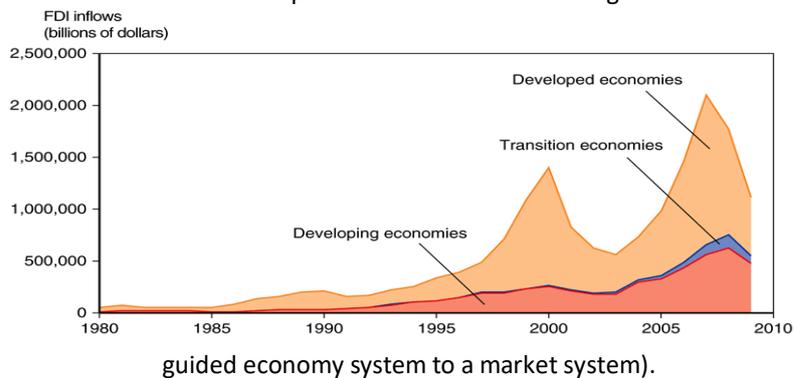
- Very often producers go to the government to ask for anti-dumping tariffs. Is this correct? Mostly not. It's not good for the welfare, the standard of living and is not good when it is applied in the context of dumping (only focusing on the producer and not on the consumers, which profit from dumping).
- Most economists believe that the enforcement of dumping claims is misguided.
  - Trade costs have a natural tendency to induce firms to lower their markups in export markets.
  - Such enforcement may be used excessively as an excuse for protectionism.

## MULTINATIONALS AND OUTSOURCING

- **A multinational** = some big company that is active not alone in his own country, but also in other countries all over the world.
- Multinational most of the time under: **Foreign direct investment (FDI)** -> refers to investment in which a firm in one country *directly controls or owns* a subsidiary in another country.
- If you buy some shares, you have export of capital, because the money flows to the foreign company. It isn't a foreign direct investment, because if you buy only 1 share, you don't have control over that foreign company. The control starts if you have sufficient shares = 10%.
- If a foreign company invests in at least 10% of the stock in a subsidiary, the two firms are typically classified as a **multinational corporation**.
  - 10% or more of ownership in stock is deemed to be sufficient for direct control of business operations.
- Types of FDI:
  - *Greenfield* FDI is when a company builds a new production facility abroad.

- *Brownfield* FDI (or cross-border mergers and acquisitions) is when a domestic firm buys a controlling stake in a foreign firm.

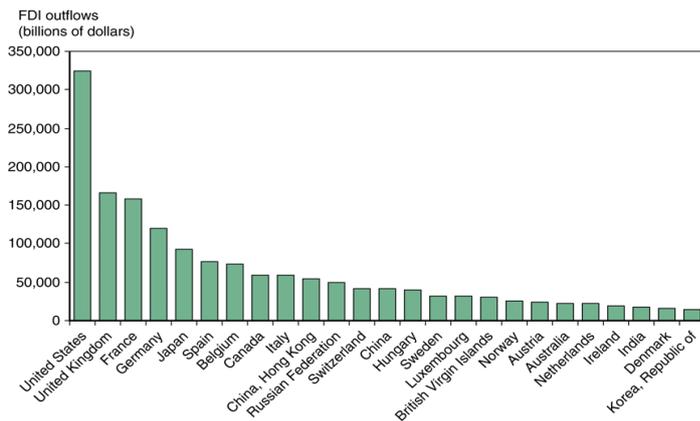
➔ Greenfield FDI has tended to be more stable, while cross-border mergers and acquisitions tend to occur in surges.



- Developed countries have been the biggest recipients of inward FDI.

- much more volatile than FDI going to developing and transition economies (= East-Europa and Central-Asia -> they are coming from a communistic, centrally

- Steady expansion in the share of FDI flowing to developing and transition countries.
  - Accounted for half of worldwide FDI flows in 2009.
- Sales of FDI affiliates are often used as a measure of multinational activity.
- Two main types of FDI:
  - **Horizontal FDI** when the affiliate replicates the production process (that the parent firm undertakes in its domestic facilities) elsewhere in the world.
    - E.g. Coca-cola that has its plants in the US, but also have plant her in Europe in which it produces Coca-Cola.
  - **Vertical FDI** when the production chain is broken up, and parts of the production processes are transferred to the affiliate location.
    - E.g. Big oil producer which has a plant in Saudi-Arabia, but has a plant (in a later stage) here in Western-Europe.
- Vertical FDI is mainly driven by production cost differences between countries (for those parts of the production process that can be performed in another location).
  - Vertical FDI is growing fast and is behind the large increase in FDI inflows to developing countries.
- Horizontal FDI is dominated by flows between developed countries.
  - Both the multinational parent and the affiliates are usually located in developed countries.
  - The transportation costs can be too high, that building a new plant in for example Belgium (which involved a lot of fixed costs) is more interesting than exporting it from the other country.
    - E.g. Coca-cola: It's cheaper to build a plant in Gent than transport bottles of Coca-cola to here. They only transport the secret ingredient that is a lot compacter. Exporting water is tooexpensive.
- The main reason for this type of FDI is to locate production near a firm's large customer bases.
  - Hence, trade and transport costs play a much more important role than production cost differences for these FDI decisions.



## THE FIRM'S DECISION REGARDING FOREIGN DIRECT INVESTMENT

- **Proximity-concentration trade-off:**
  - High trade costs associated with exporting create an incentive to locate production near customers. Build a plant over there can be cheaper.
  - Increasing returns to scale in production create an incentive to concentrate production in fewer locations.
- FDI activity concentrated in sectors with high trade costs. (E.g. Cement)
  - When increasing returns to scale are important and average plant sizes are large, we observe higher export volumes relative to FDI.
- Multinationals tend to be much larger and more productive than other firms (even exporters) in the same country.
- The horizontal FDI decision involves a trade-off between the per-unit export cost  $t$  and the fixed cost  $F$  of setting up an additional production facility.
- If  $t(Q) > F$ , costs more to pay trade costs  $t$  on  $Q$  units sold abroad than to pay fixed cost  $F$  to build a plant abroad.
  - When foreign sales large  $Q > F/t$ , exporting is more expensive and FDI is the profit-maximizing choice.
  - Low costs make more apt to choose FDI due to larger sales.
- The vertical FDI decision also involves a trade-off between cost savings and the fixed cost  $F$  of setting up an additional production facility.
  - Cost savings related to comparative advantage make some stages of production cheaper in other countries.
- Foreign **outsourcing** (involving another company of which you are not the owner) or **offshoring** (going abroad) occurs when a firm contracts with an independent firm to produce in the foreign location.
  - E.g. coca-cola could have taken the decision to give a license to some company over here and give it the secret of making coke and let the company pay for that and just lay back and relax. But they wouldn't reveal the secret. There is intellectual property involved which coca-cola wants to keep in its own possession.
  - In addition to deciding the **location** of where to produce, firms also face an **internalization** decision: whether to keep production done by one firm or by separate firms.
- Internalization occurs when it is more profitable to conduct transactions and production within a single organization. Reasons for this include:
- **Technology transfers:** transfer of knowledge or another form of technology may be easier within a single organization than through a market transaction between separate organizations.
  - Patent or property rights may be weak or nonexistent.

- Knowledge may not be easily packaged and sold.
- **Vertical integration** involves consolidation of different stages of a production process.
  - Consolidating an input within the firm using it can avoid holdup problems and hassles in writing complete contracts.
  - But an independent supplier could benefit from economies of scale if it performs the process for many parent firms.
  - If your supplier is also a monopolist, you have 2 monopolist (upstream and downstream). Upstream had no control over downstream. Because they are both monopolist, they will both optimize their strategy -> there will become a double marginalization (= you would have 2 monopoly profits with an even lower quantity and a higher price than 1 monopoly)
- Foreign direct investment should benefit the countries involved for reasons similar to why international trade generates gains.
  - Multinationals and firms that outsource take advantage of cost differentials that favor moving production (or parts thereof) to particular locations.
  - FDI is very similar to the relocation of production that occurred *across* sectors when opening to trade.
  - There are similar welfare consequences for the case of multinationals and outsourcing: Relocating production to take advantage of cost differences leads to overall gains from trade.

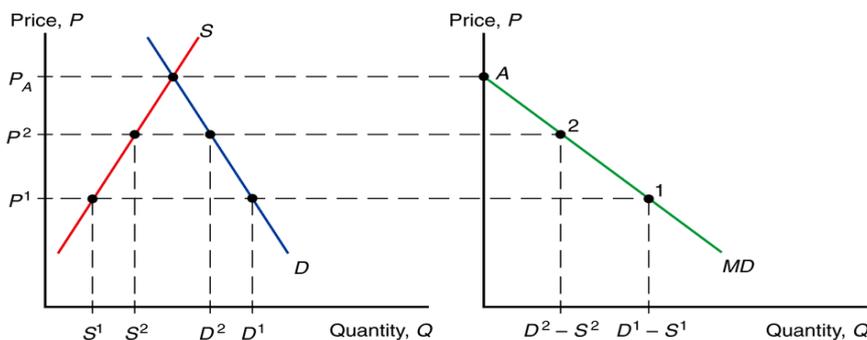
# CHAPTER 9: THE INSTRUMENTS OF TRADE POLICY

## TYPES OF TARIFFS

- A tariff is a tax levied when a good is imported.
- A specific tariff is levied as a fixed charge for each unit of imported goods.
  - For example, \$3 per barrel of oil.
- An ad valorem tariff is levied as a fraction of the value of imported goods.
  - For example, 25% tariff on the value of imported trucks.

## SUPPLY, DEMAND, AND TRADE IN A SINGLE INDUSTRY

- Consider how a tariff affects a single market, say that of wheat.
- Suppose that in the absence of trade the price of wheat is higher in Home than it is in Foreign.
- With trade, wheat will be shipped from Foreign to Home until the price difference is eliminated.
- An import demand curve is the difference between the quantity that Home consumers demand minus



the quantity that Home producers supply, at each price.

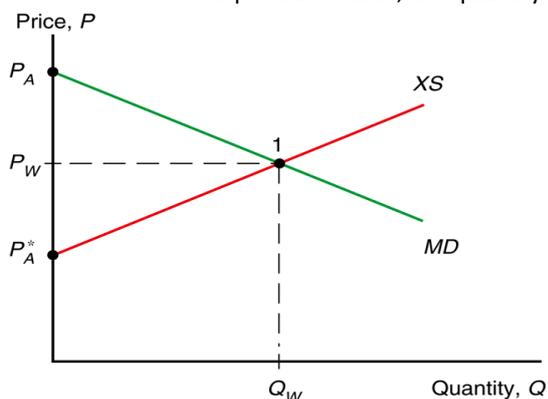
- The Home import demand curve  $MD = D - S$  intercepts the price axis at  $P_A$  and is downward sloping:
  - As price increases, the quantity of imports demanded declines.



An export supply curve is the difference between the quantity that Foreign producers supply minus the quantity that Foreign consumers demand, at each price.

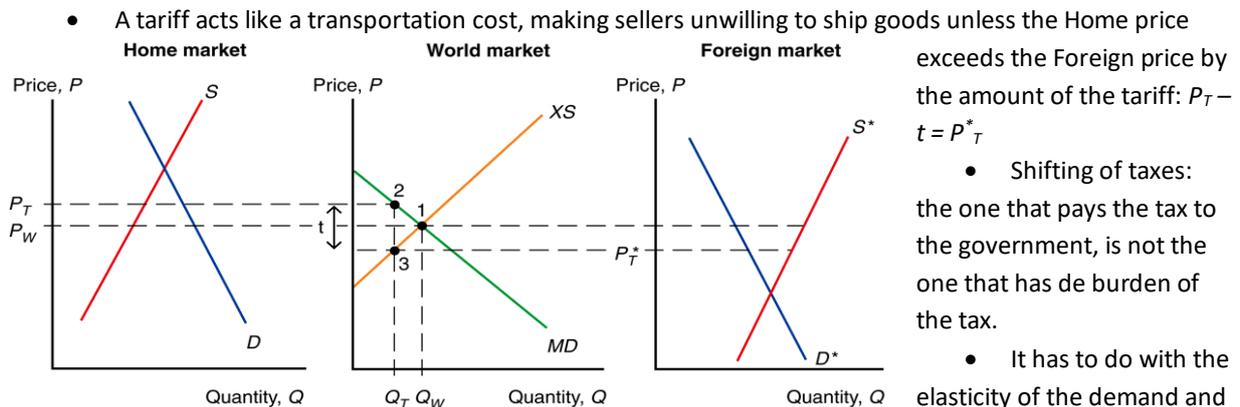
- The Foreign export supply curve  $XS^* = S^* - D^*$  intercepts the price axis at  $P_A^*$  and is upward sloping:

- As price increases, the quantity of exports supplied rises.



- In equilibrium,
  - import demand = export supply,
  - home demand – home supply = foreign supply – foreign demand,
  - home demand + foreign demand = home supply + foreign supply,
  - world demand = world supply.

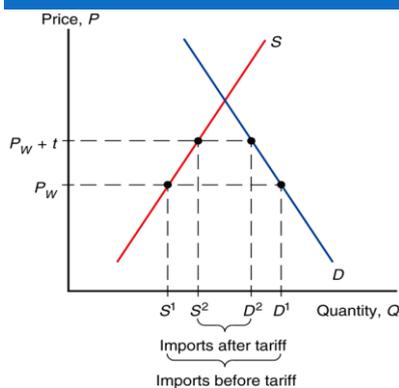
## THE EFFECTS OF A TARIFF



supply. If the supply curve is flatter, more of the tax is shifted to the consumer. If the curve is steeper, more is shifted to the foreign supply. It will determine where the burden is shifted to.

- A tariff makes the price rise in the Home market and fall in the Foreign market.
- Because the price in the Home market rises from  $P_W$  under free trade to  $P_T$  with the tariff,
  - Home producers supply more and Home consumers demand less, so
  - the quantity of imports falls from  $Q_W$  under free trade to  $Q_T$  with the tariff.
- Because the price in the Foreign market falls from  $P_W$  under free trade to  $P_T^*$  with the tariff,
  - Foreign producers supply less, and Foreign consumers demand more, so
  - the quantity of exports falls from  $Q_W$  to  $Q_T$ .
- The quantity of Home imports demanded equals the quantity of Foreign exports supplied when  $P_T - P_T^* = t$
- The increase in the price in Home can be less than the amount of the tariff.
  - Part of the effect of the tariff causes the Foreign export price to decline.
  - But this effect is sometimes very small.

## THE EFFECTS OF A TARIFF IN A SMALL COUNTRY



- When a country is "small," it has no effect on the foreign (world) price because its demand is an insignificant part of world demand for the good.
  - The foreign price does not fall, but remains at  $P_W$ .
  - The price in the home market rises by the full amount of the tariff, to  $P_T = P_W + t$ .
- Power relations = elasticity

## EFFECTIVE RATE OF PROTECTION

- The effective rate of protection measures how much protection a tariff (or other trade policy) provides.
  - It represents the change in value that firms in an industry add to the production process when trade policy changes, which depends on the change in prices the trade policy causes.
- Effective rates of protection often differ from tariff rates because tariffs affect sectors other than the protected sector, causing indirect effects on the prices and value added for the protected sector.

- For example, suppose that automobiles sell in world markets for \$8,000, and they are made from factors of production worth \$6,000.
  - The value added of the production process is \$8,000 – \$6,000.
- Suppose that a country puts a 25% tariff on imported autos so that home auto assembly firms can now charge up to \$10,000 instead of \$8,000.
  - The value added increases with 100%: from \$2,000 to \$4,000
- The effective rate of protection for home auto assembly firms is the change in value added:  $(\$4,000 - \$2,000)/\$2,000 = 100\%$
- In this case, the effective rate of protection is greater than the tariff rate.

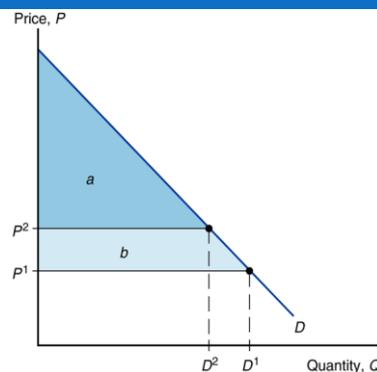
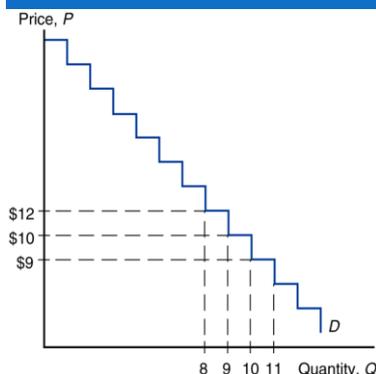
What happens if the sector of the inputs in that country also ask protection? 10% on the inputs of the car industry? What happens in the end market of the car?

- The price of the car in the end market with the 25% tariff? \$10,000.
- The car industry has to pay more for its inputs because of the 10% tax on the inputs. The producer has a choice between buying part in Home or in Foreign.
- If there's a free market the price remains \$6,000. If you put a tax on it, not only the price of the parts coming from abroad, but also from you own country will go up.
- Independent from where they buy, they have to pay \$6,600 inputs.
- The value added after introducing 10% tariff on the car part imports and 25% on imported cars? \$3,400.
- The effective rate is negative, because of the tariffs in the inputs, you can add less value yourself.
- Effective rate of protections =  $(\$3,400 - \$2,000)/\$2,000 = 70\%$  effective protection.
  - ➔ CASCADE EFFECT = waterfall effect.

## COSTS AND BENEFITS OF TARIFFS

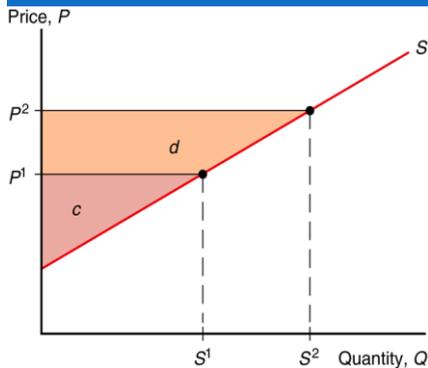
- A tariff raises the price of a good in the importing country, so it hurts consumers and benefits producers there.
- In addition, the government gains tariff revenue.
- How to measure these costs and benefits?
- Use the concepts of consumer surplus and producer surplus.

## CONSUMER SURPLUS



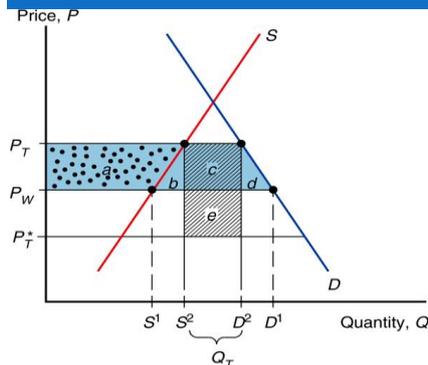
- Consumer surplus measures the amount that consumers gain from purchases by computing the difference in the price actually paid from the maximum price they would be willing to pay for each unit consumed.
- When price increases, the quantity demanded decreases as well as the consumer surplus.

## PRODUCER SURPLUS

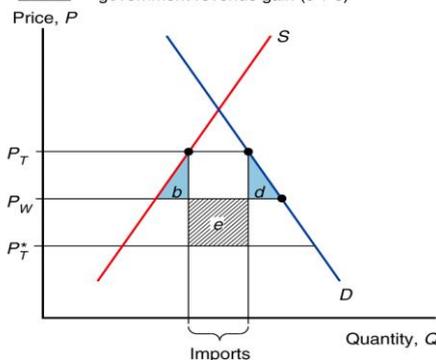


- Producer surplus measures the amount that producers gain from sales by computing the difference in the price received from the minimum price at which they would be willing to sell.
  - When price increases, the quantity supplied increases as well as the producer surplus.

## COSTS AND BENEFITS OF TARIFFS



- = consumer loss (a + b + c + d)
- = producer gain (a)
- = government revenue gain (c + e)



- = efficiency loss (b + d)
- = terms of trade gain (e)

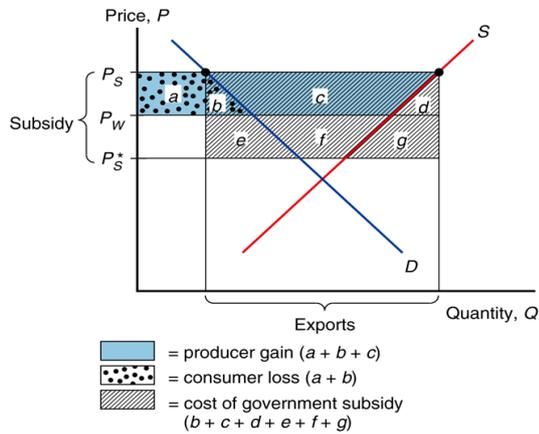
and foreigners.

- If the terms of trade gain exceed the efficiency loss, then national welfare will increase under a tariff, at the expense of foreign countries.
  - However, foreign countries are apt to retaliate.
- If nothing can be shifted abroad, there is no e. Foreign producers pay part of the tax. This is only possible if you have a power on them. If you are a small country you can't do this. If you are very powerful a part of your revenue gain comes from your own citizens, but from foreign producers.
- It depends on the elasticity of your Demand and Supply curve.

## EXPORT SUBSIDY

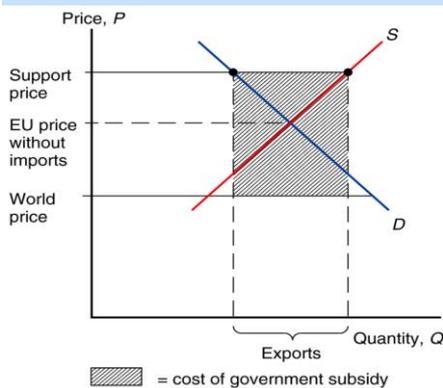
- An export subsidy can also be *specific* or *ad valorem*:
  - A specific subsidy is a payment per unit exported.

- An ad valorem subsidy is a payment as a proportion of the value exported.
- An export subsidy raises the price in the exporting country, decreasing its consumer surplus (consumers worse off) and increasing its producer surplus (producers better off).
- Also, government revenue falls due to paying  $s X_S^*$  for the export subsidy.
- An export subsidy lowers the price paid in importing countries  $P_S^* = P_S - s$ .
- In contrast to a tariff, an export subsidy worsens the terms of trade by lowering the price of exports in world markets.



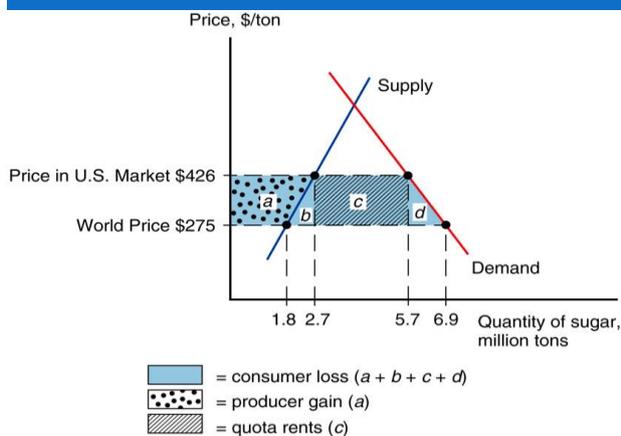
- An export subsidy damages national welfare.
- The triangles  $b$  and  $d$  represent the efficiency loss.
  - The export subsidy distorts production and consumption decisions: producers produce too much and consumers consume too little compared to the market outcome.
  - The area  $b + c + d + e + f + g$  represents the cost of the subsidy paid by the government.
    - The terms of trade *decrease*, because the price of exports falls.

## EXPORT SUBSIDY IN EUROPE



- The European Union's Common Agricultural Policy sets high prices for agricultural products and subsidizes exports to dispose of excess production.
  - The subsidized exports reduce world prices of agricultural products.
- The cost of this policy for European taxpayers is almost \$30 billion more than its benefits (in 2007).
  - But the EU has proposed that farmers receive direct

## IMPORT QUOTA



- An import quota is a restriction on the quantity of a good that may be imported.
  - This restriction is usually enforced by issuing licenses or quota rights.
  - A binding import quota will push up the price of the import because the quantity demanded will exceed the quantity supplied by Home producers and from imports.
    - When a quota instead of a tariff is used to restrict imports, the government receives no revenue.
- Instead, the revenue from selling imports at high prices goes to quota license holders.
- These extra revenues are called quota rents.

## VOLUNTARY EXPORT RESTRAINT

- A voluntary export restraint works like an import quota, except that the quota is imposed by the exporting country rather than the importing country.
- These restraints are usually requested by the importing country.
- The profits or rents from this policy are earned by foreign governments or foreign producers.
  - Foreigners sell a restricted quantity at an increased price.
- E.g: Japanese will export their big cars to the US, instead of their small ones. Because they can make more profit out of it.

## LOCAL CONTENT REQUIREMENT

- A local content requirement is a regulation that requires a specified fraction of a final good to be produced domestically.
- It may be specified in value terms, by requiring that some minimum share of the value of a good represent home value added, or in physical units.
- From the viewpoint of domestic producers of inputs, a local content requirement provides protection in the same way that an import quota would.
- From the viewpoint of firms that must buy home inputs, however, the requirement does not place a strict limit on imports, but allows firms to import more if they also use more home parts.
- Local content requirement provides neither government revenue (as a tariff would) nor quota rents.
- Instead, the difference between the prices of home goods and imports is averaged into the price of the final good and is passed on to consumers.

## OTHER TRADE POLICIES

- Export credit subsidies
  - A subsidized loan to exporters
  - U.S. Export-Import Bank subsidizes loans to U.S. exporters.
- Government procurement
  - Government agencies are obligated to purchase from home suppliers, even when they charge higher prices (or have inferior quality) compared to foreign suppliers.
  - France: Poitiers: video recorders from abroad where all checked, so it took a very long time until they found their way to the stores. Many customers complained.
- Bureaucratic regulations
  - Safety, health, quality, or customs regulations can act as a form of protection and trade restriction.

## THE EFFECTS OF TRADE POLICY

TABLE 9-1 Effects of Alternative Trade Policies

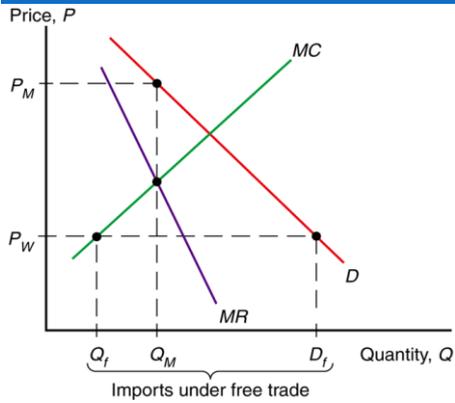
	Tariff	Export Subsidy	Import Quota	Voluntary Export Restraint
Producer surplus	Increases	Increases	Increases	Increases
Consumer surplus	Falls	Falls	Falls	Falls
Government revenue	Increases	Falls (government spending rises)	No change (rents to license holders)	No change (rents to foreigners)
Overall national welfare	Ambiguous (falls for small country)	Falls	Ambiguous (falls for small country)	Falls

consumers demand less and lose.

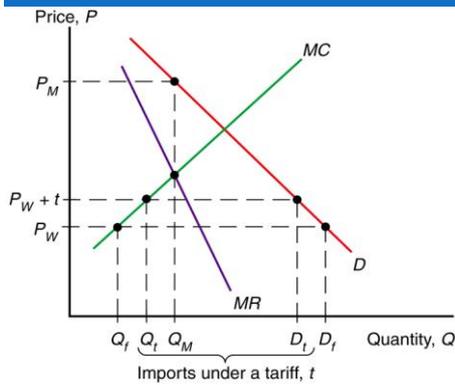
- For each trade policy, the price rises in the Home country adopting the policy.
  - Home producers supply more and gain.
  - Home

- The world price falls when Home is a “large” country that affects world prices.
- Tariffs generate government revenue; export subsidies drain it; import quotas do not affect government revenue.
- All these trade policies create production and consumption distortions.

### A MONOPOLIST UNDER FREE TRADE

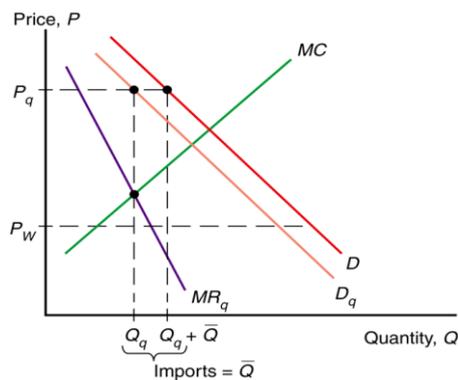


### A MONOPOLIST PROTECTED BY A TARIFF



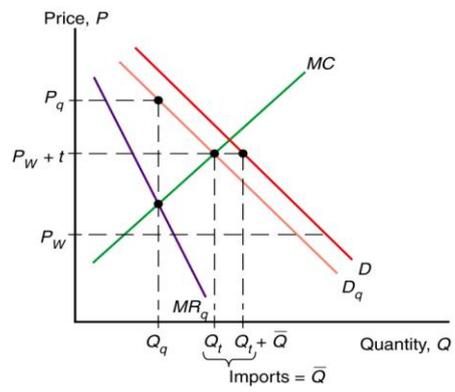
Monopolist can sell more than with free trade.

### A MONOPOLIST PROTECTED BY AN IMPORT QUOTA



Monopolist could ask as much as he wants, because the foreign countries can't export more to here. They have to follow the monopolist. The amount sold with a quota is smaller.

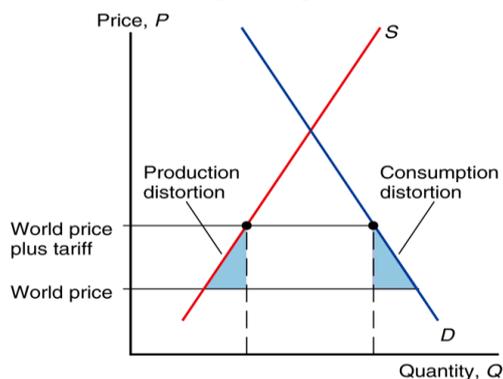
## COMPARING A TARIFF AND A QUOTA



# CHAPTER 10: THE POLITICAL ECONOMY OF TRADE POLICY

## THE CASES FOR FREE TRADE

- The first case for free trade is the argument that producers and consumers **allocate resources most efficiently** when governments do not distort market prices through trade policy.



- National welfare of a small country is highest with free trade, because they can't force their suppliers to drop their prices, so any tariff comes on top off the original free trade price. If the tariff comes on top off the price, there is loss composed of 2 parts: producers produce too much (inefficient) and consumers consume too little (inefficient). These two parts are the loss off protection.
- With restricted trade, consumers pay higher prices and consume too little while firms produce too much.

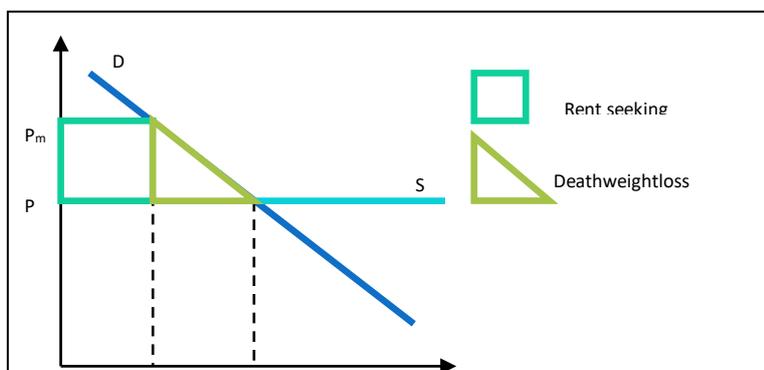
United States	0.57
European Union	0.61
Japan	0.85
Developing countries	1.4
World	0.93

Source: William Cline, *Trade Policy and Global Poverty* (Washington, D.C.: Institute for International Economics, 2004), p. 180.

- However, because tariff rates are already low for most countries, the estimated benefits of moving to free trade are only a

small fraction of national income for most countries.

- For the world as a whole, protection costs less than 1 percent of GDP.
- The gains from free trade are somewhat smaller for advanced economies such as the United States and Europe and somewhat larger for poorer developing countries.
- Free trade allows firms or industry to take advantage of **economies of scale**.
- Protected markets limit gains from external economies of scale by inhibiting the concentration of industries:
  - Too many firms to enter the protected industry.
  - The scale of production of each firm becomes inefficient.
- Free trade provides **competition and opportunities for innovation** (dynamic benefits).
- By providing entrepreneurs with an incentive to seek new ways to export or compete with imports,



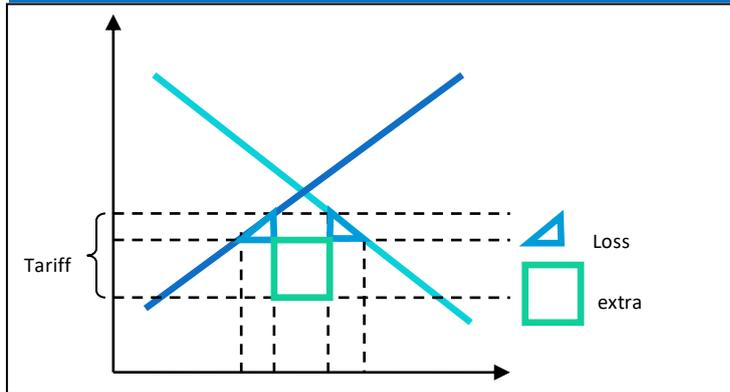
free trade offers more opportunities for learning and innovation.

- Free trade avoids the loss of resources through **rent seeking**.
  - Spend time and other resources seeking quota rights and the profit that they will earn.
  - Rent seeking goes from the consumer to the monopolist. For the welfare of the economy there is no difference. But what if they are

in the political process (lobbying)? Lot of resources spent to lobbying, so it's a loss for the economy. Then the welfare loss is more than the triangle, because lobbying is a waste of resources.

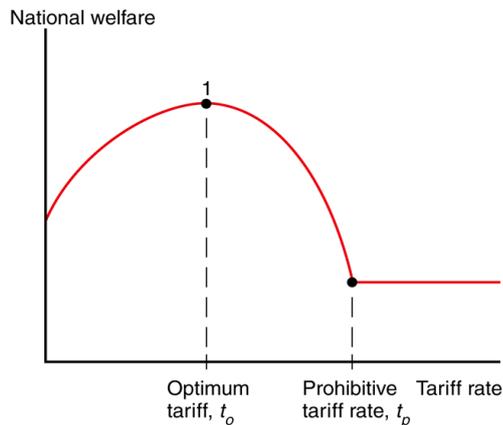
- The **political argument for free trade** says that free trade is the best *feasible* political policy, even though there may be better policies in principle.
  - Any policy that deviates from free trade would be quickly manipulated by political groups, leading to decreased national welfare.

## THE CASES AGAINST FREE TRADE



- For a “large” country, a tariff lowers the price of imports in world markets and generates a **terms of trade gain**.
  - This benefit may exceed the losses caused by distortions in production and consumption.
    - A small tariff will lead to an increase in national welfare for a large country.

- But at some tariff rate, the national welfare will begin to decrease as the economic efficiency loss exceeds the terms of trade gain.



- A tariff rate that completely prohibits imports leaves a country worse off, but tariff rate  $t_o$  may exist that maximizes national welfare: an **optimum tariff**.
  - Prohibitive tariff rate: there is no import, so no gain.
  - Same for an export tax (a negative export subsidy) that completely prohibits exports leaves a country worse off, but an export tax rate may exist that maximizes national welfare through the terms of trade.
    - An export subsidy lowers the terms of trade for a large country; an export tax raises the terms of trade for a large country.
    - An export tax may raise the price of exports in the world market, increasing the terms of trade.

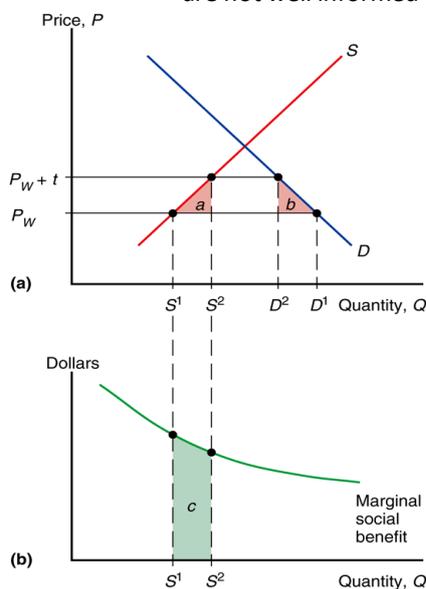
### Counter-Argument

*For some countries like the U.S., an import tariff and/or export tax could improve national welfare at the expense of other countries.*

*But this argument ignores the likelihood that other countries may retaliate against large countries by enacting their own trade restrictions.*

- A second argument against free trade is that **domestic market failures** may exist that cause free trade to be a suboptimal policy. Markets don't always work like they are supposed to economic courses.
  - E.g.: labor market: if it doesn't function like it should, we have unemployment. Unemployment can be used as an argument to introduce protection, if jobs are in danger. Government saves the jobs (Car sector in Belgium) by production.

- The economic efficiency loss calculations using consumer and producer surplus assume that markets function well.
- Types of market failures include
  - Persistently high underemployment of workers
    - surpluses that are not eliminated in the market for labor because wages do not adjust
  - Persistently high underutilization of structures, equipment, and other forms of capital
    - surpluses that are not eliminated in the market for capital because prices do not adjust
  - Property rights not well defined or well enforced
  - technological benefits for society discovered through private production, but from which private firms cannot fully profit
  - environmental costs for society caused by private production, but for which private firms do not fully pay
  - sellers that are not well informed about the (opportunity) cost of production or buyers that are not well informed about value from consumption



- Economists calculate the **marginal social benefit** to represent the additional benefit to society from private production.
  - With a market failure, marginal social benefit is not accurately measured by the producer surplus of private firms, so that economic efficiency loss calculations are misleading.
  - It's possible that when a tariff increases domestic production, the benefit to domestic society will increase due to a market failure. ( $c > a + b$ )
    - You don't have to correct market failures by using a trade policy, you have to correct them immediately. Instead of a tariff (so prices goes up), we use a direct subsidy (to the producers). The prices for the producer is guaranteed, but consumer don't pay more. (E.g.: agriculture European policy)
  - The domestic market failure argument against free trade is an example of a more general argument called the **theory of the second best**.

- Government intervention that distorts market incentives in one market may increase national welfare by offsetting the consequences of market failures elsewhere.
  - If the best policy, fixing the market failures, is not feasible, then government intervention in another market may be the "second-best" way of fixing the problem.

### Counter-Arguments

*Economists supporting free trade counter-argue that domestic market failures should be corrected by a "first-best" policy: a domestic policy aimed directly at the source of the problem.*

*If persistently high underemployment of labor is a problem, then the cost of labor or production of labor-intensive products could be subsidized by the government.*

*This policy could avoid economic efficiency losses due to a tariff.*

*Unclear when and to what degree a market failure exists in the real world.*

Government policies to address market failures are likely to be manipulated by politically powerful groups.

Due to distorting the incentives of producers and consumers, trade policy may have unintended consequences that make a situation worse, not better.

## POLITICAL MODELS OF TRADE POLICY

- How is trade policy determined?
- Models of governments maximizing political success rather than national welfare:
  - Median voter theorem = it's the one that can determine the majority. He can switch the majority from the one, to the other side.
  - Collective action: Government/Politicians + 2 groups in society when trade policy is involved:
    - The group that pays for the policy: the consumers. By introducing a tariff, they will pay higher prices. If the protection is to subsidy, they will pay more taxes. This is a big group. So everyone is paying a little bit. It's not interesting for them to lobby.
    - The group that benefits from the trade policy: the producers that got the protection. It's not only about the capital involved in the sector, but it's also about the jobs there. Tariffs protect the value added. The benefit per capita is very important. It's the difference between having a job and not having a job. It's the difference between having a share in a company that is worth something, than is worth nothing. There is a big incentive to lobby, because it's a small group. Here is a strong pressure on politicians. Politicians will listen more careful to this group.
  - A model that combines aspects of collective action and the median voter theorem

## COLLECTIVE ACTION

- Political activity is often described as a **collective action problem**:
  - While consumers *as a group* have an incentive to advocate free trade, each *individual* consumer has no incentive because his benefit is not large compared to the cost and time required to advocate free trade.
  - Policies that impose large losses for society as a whole but small losses on each individual may therefore not face strong opposition.
- However, for groups who suffer large losses from free trade (for example, unemployment), each individual in that group has a strong incentive to advocate the policy he desires.
  - In this case, the cost and time required to advocate restricted trade is small compared to the cost of unemployment.

## WHICH INDUSTRIES ARE PROTECTED?

- **Agriculture**: In the U.S., Europe, and Japan, farmers make up a small fraction of the electorate but receive generous subsidies and trade protection.
  - Examples: European Union's Common Agricultural Policy, Japan's 1000% tariff on imported rice, America's sugar quota.
    - Japan: It's cheaper to import rice from other countries (China, Thailand ...), because it's hard to grow it. To protect the local farmers they set an enormous tariff.

TABLE 10-2 Welfare Costs of U.S. Protection (\$ billion)		
	2002 Estimate	2013 Projected
Total	14.1	4.6
Textiles and apparel	11.8	2.3

Source: U.S. International Trade Commission.

- **Clothing**: textiles (fabrication of cloth) and apparel (assembly of cloth into clothing).

- Until 2005, quota licenses granted to textile and apparel exporters were specified in the Multi-Fiber Agreement between the U.S. and many other nations.
- Phase-out of MFA drastically reduced the costs of U.S. protection, from 14.1 billion in 2001 (11.8 billion from textiles and apparel) to 4.6 billion projected for 2013 (half from textiles and apparel).

## INTERNATIONAL NEGOTIATIONS OF TRADE POLICY

- During the Interbellum (Period between the 2 world wars): hyper inflation in Germany and the stock market crash -> depression. Start of movements in Europe:
- After rising sharply at the beginning of the 1930s, the average tariff rates have decreased substantially from the mid-1930s to 1998.
- Since 1944, much of the reduction in tariffs and other trade restrictions has come about through international negotiations.
  - The **General Agreement of Tariffs and Trade** was begun in 1947 as a provisional international agreement and was replaced by a more formal international institution called the **World Trade Organization** in 1995.
- Multilateral negotiations mobilize exporters to support free trade if they believe export markets will expand.
  - This support would be lacking in a unilateral push for free trade. The multilateral approach counteracts the support for restricted trade by import-competing groups.
- Multilateral negotiations also help avoid a trade war between countries, where each country enacts trade restrictions.
- A trade war could result if each country has an incentive to adopt protection, *regardless of what other countries do*.
  - All countries could enact trade restrictions, even if it is in the interest of all countries to have free trade.
  - Countries need an agreement that prevents a trade war or eliminates the protection from one.

**TABLE 10-3 The Problem of Trade Warfare**

		Japan	
		Free trade	Protection
U.S.	Free trade	10	-10
	Protection	20	-5

- Situation of Breton Woods: The prisoners dilemma.
  - In this example, each country acting

individually would be better off with protection ( $20 > 10$ ), but both would be better off if both chose free trade than if both choose protection ( $10 > -5$ ).

- If Japan and the U.S. can establish a binding agreement to maintain free trade, both can avoid the temptation of protection and both can be made better off.
  - Or if the damage has already been done, both countries can agree to return to free trade.

## WORLD TRADE ORGANIZATION

- In 1947, a group of 23 countries began trade negotiations under a provisional set of rules that became known as the General Agreement on Tariffs and Trade, or GATT. It was just an agreement, while WTO is a real organization. It was temporary.
- In 1995, the **World Trade Organization**, or **WTO**, was established as a formal organization for implementing multilateral trade negotiations (and policing them).

- WTO negotiations (**traderounds**) address trade restrictions in at least 3 ways:
  - **Reducing tariff rates** through multilateral negotiations.
  - **Binding tariff rates:** a tariff is “bound” by having the imposing country agree not to raise it in the future. They set a maximum tariff, but they can set a much lower tariff if they want.
  - **Eliminating nontariff barriers:** quotas and export subsidies are changed to tariffs because the costs of tariff protection are more apparent and easier to negotiate.
    - Subsidies for agricultural exports are an exception.
    - Exceptions are also allowed for “market disruptions” caused by a surge in imports.
- The World Trade Organization is based on a number of agreements:
  - General Agreement on Tariffs and Trade: covers trade in goods.
  - General Agreement on Tariffs and Services: covers trade in services (ex., insurance, consulting, legal services, banking). (during the Uruguay round)
    - ➔ Most favorite nation clause: If you have 3 countries: 1 country has an agreement with another country on trade. Then 1 of these 2 starts talking to a 3<sup>rd</sup> country. E.g. they agree to give a very low tariff to import coming from that 3<sup>rd</sup> country into that 2<sup>nd</sup> country. If the 1<sup>st</sup> and 2<sup>nd</sup> country have a most favorite nation clause in their trade agreement, then the 2<sup>nd</sup> country have to give the low tariff also to the 1<sup>st</sup> country.
    - ➔ WTO adopted this principle.
  - Agreement on Trade-Related Aspects of Intellectual Property: covers international property rights (ex., patents and copyrights).
- *The dispute settlement procedure:* a formal procedure where countries in a trade dispute can bring their case to a panel of WTO experts to rule upon.
  - The panel decides whether member counties are breaking their agreements.
  - A country that refuses to adhere to the panel’s decision may be punished by the WTO allowing other countries to impose trade restrictions on its exports.
- The GATT multilateral negotiations in the Uruguay Round, ratified in 1994:
  - agreed that all quantitative restrictions (ex., quotas) on trade in textiles and clothing as previously specified in the Multi-Fiber Agreement were to be eliminated by 2005.
- Quotas on imports from China had to be temporarily reimposed due to surge in Chinese clothing exports when MFA expired.
- In 2001 (Today), a new round of negotiations was started in Doha, Qatar, but these negotiations have not yet produced an agreement. = millennium rounds.

**TABLE 10-4 Percentage Distribution of Potential Gains from Free Trade**

Economy	Full Liberalization of:			
	Agriculture and Food	Textiles and Clothing	Other Merchandise	All Goods
Developed	46	6	3	55
Developing	17	8	20	45
All	63	14	23	100

Source: Kym Anderson and Will Martin, “Agricultural Trade Reform and the Doha Agenda,” *The World Economy* 28 (September 2005), pp. 1301–1327.

- Most of the remaining forms of protection are in agriculture, textiles, and clothing—industries that are politically well organized. Developed countries benefits

from free trade, but also developing countries starts benefiting.

**DO AGRICULTURAL SUBSIDIES IN RICH COUNTRIES HURT POOR COUNTRIES?**

**TABLE 10-5 Percentage Gains in Income under Two Doha Scenarios**

	Ambitious	Less Ambitious
High-income	0.20	0.05
Middle-income	0.10	0.00
China	−0.02	−0.05
Low-income	0.05	0.01
World	0.18	0.04

Source: See Table 10-4.

- We learned in **Chapter9** that subsidies lower the *world* price of products.
  - Since importing countries benefit

from cheaper food, why would poor countries want rich countries to remove their agricultural subsidies?

- Subsidies harm farmers in poor countries who compete with farmers in rich countries.

## PREFERENTIAL TRADING AGREEMENTS

- Preferential trading agreements are trade agreements between countries in which they lower tariffs for each other but not for the rest of the world.
- Under the WTO, such discriminatory trade policies are generally not allowed:
  - Each country in the WTO promises that all countries will pay tariffs no higher than the nation that pays the lowest: called the “most favored nation” (MFN) principle.
  - An exception is allowed only if the lowest tariff rate is set at zero.
- There are two types of preferential trading agreements in which tariff rates are set at or near zero:
  - A **free trade area**: an agreement that allows free trade among members, but each member can have its own trade policy towards non-member countries.
    - An example is the North America Free Trade Agreement (NAFTA).
  - A **customs union**: an agreement that allows free trade among members and requires a common external trade policy towards non-member countries.
    - An example is the European Union.
    - ➔ All member of the EU are member of the WTO.
- Are preferential trading agreements necessarily good for national welfare?
  - No, it is possible that national welfare decreases under a preferential trading agreement.
  - How? Rather than gaining tariff revenue from inexpensive imports from world markets, a country may import expensive products from member countries but not gain any tariff revenue.
- Preferential trading agreements increase national welfare when new trade is created, but not when existing trade from the outside world is diverted to trade with member countries.
- Trade creation
  - occurs when high-cost domestic production is replaced by *low-cost imports from other members*.
- Trade diversion
  - occurs when low-cost imports from nonmembers are diverted to *high-cost imports from member nations*.

# CHAPTER 11: TRADE POLICY IN DEVELOPING COUNTRIES

## INTRODUCTION

**TABLE 11-1** Gross Domestic Product Per Capita, 2009 (dollars, adjusted for differences in price levels)

United States	46,008
Germany	36,163
Japan	34,167
South Korea	28,443
Mexico	15,130
China	8,383
Bangladesh	1,747

**Source:** Conference Board Total Economy Database.

- Which countries are “developing countries”?
- The term “developing countries” does not have a precise definition, but it is a name given to many low- and middle-income countries.

## IMPORT-SUBSTITUTING INDUSTRIALIZATION

- Import-substituting industrialization was a trade policy adopted by many low- and middle-income countries before the 1980s.
- The policy aimed to encourage domestic industries by limiting competing imports.
- E.g. Four Original Asian Tigers: South Korea, Taiwan, Singapore and Hong Kong.

**TABLE 11-2** Effective Protection of Manufacturing in Some Developing Countries (percent)

Mexico (1960)	26
Philippines (1965)	61
Brazil (1966)	113
Chile (1961)	182
Pakistan (1963)	271

**Source:** Bela Balassa, *The Structure of Protection in Developing Countries* (Baltimore: Johns Hopkins Press, 1971), p. 82.

During the 60’s, effective protection was very high. By this some sector could take off. They could start up and let develop it into a sector big enough to compete with the competition from abroad and to come into the place of substitutes for imports from abroad.

- The principal justification of this policy was/is the *infant industry argument*:
  - Countries may have a potential comparative advantage in some industries, but these industries cannot initially compete with well-established industries in other countries.
  - To allow these industries to establish themselves, governments should temporarily support them until they have grown strong enough to compete internationally and can profit from lower average costs.

## PROBLEMS WITH THE INFANT INDUSTRY ARGUMENT

- It may be wasteful to support industries now that will have a comparative advantage in the future.
- With protection, infant industries may never “grow up” or become competitive.
- There is no justification for government intervention unless there is a market failure that prevents the private sector from investing in the infant industry.

## INFANT INDUSTRIES AND MARKET FAILURES

- Two arguments for how market failures prevent infant industries from becoming competitive:
  - Imperfect financial asset markets

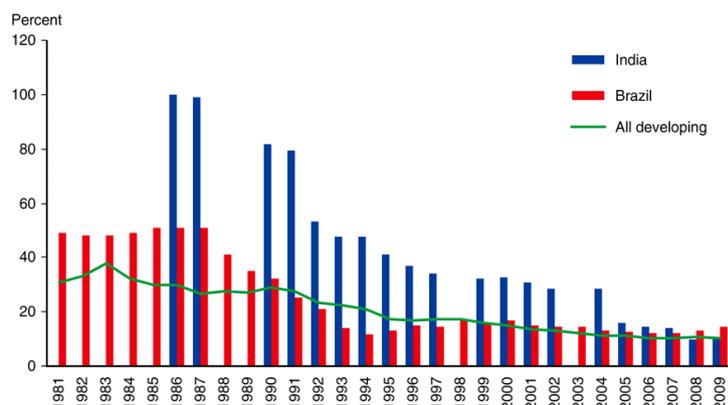
- Because of poorly working financial laws and markets (and more generally, a lack of property rights), firms cannot or do not save and borrow to invest sufficiently in their production processes.
- If creating better functioning markets and enforcing laws is not feasible, then high tariffs would be a second-best policy to increase profits in new industries, leading to more rapid growth.
- The problem of appropriability
  - Firms may not be able to privately appropriate the benefits of their investment in new industries because those benefits are public goods.
  - The knowledge created when starting an industry may not be appropriable (may be a public good) because of a lack of property rights.
  - If establishing a system of property rights is not feasible, then high tariffs would be a second-best policy to encourage growth in new industries.

## IMPORT-SUBSTITUTING INDUSTRIALIZATION (CONT.)

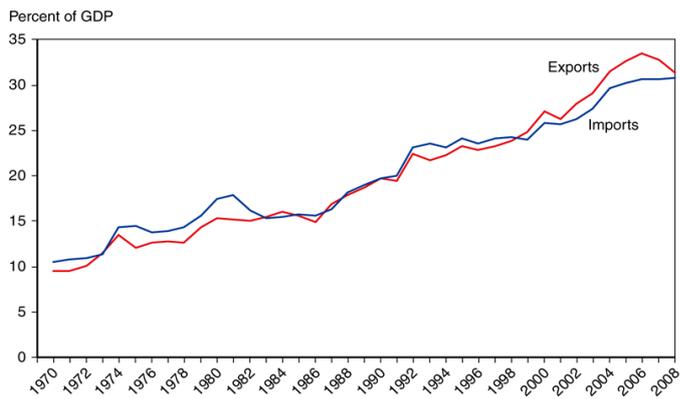
- Import-substituting industrialization in Latin American countries worked to encourage manufacturing industries in the 1950s and 1960s.
- But economic development, not encouraging manufacturing, was the ultimate goal of the policy.
- Did import-substituting industrialization promote economic development?
  - No, countries adopting these policies grew more slowly than others.
- It appeared that the infant industry argument was not as valid as some had initially believed.
- New industries did not become competitive despite or because of trade restrictions.
- Import-substitution industrialization involved costs and promoted wasteful use of resources:
  - It involved complex, time-consuming regulations.
  - It set high tariff rates for consumers, including firms that needed to buy imported inputs for their products.
  - It promoted inefficiently small industries.

## TRADE LIBERALIZATION

- Some low- and middle-income countries that had relatively free trade had higher average economic growth than those that followed import substitution.



- By the mid-1980s, many governments had lost faith in import substitution and began to liberalize trade.
  - Dramatic fall in tariff rates in India and Brazil, and less drastic reductions in many other developing countries.

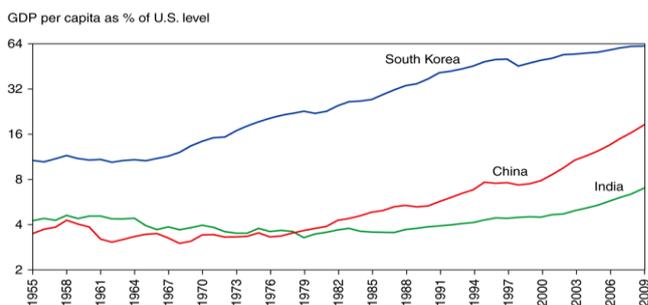


have achieved extraordinary growth while becoming more, not less, open to trade.

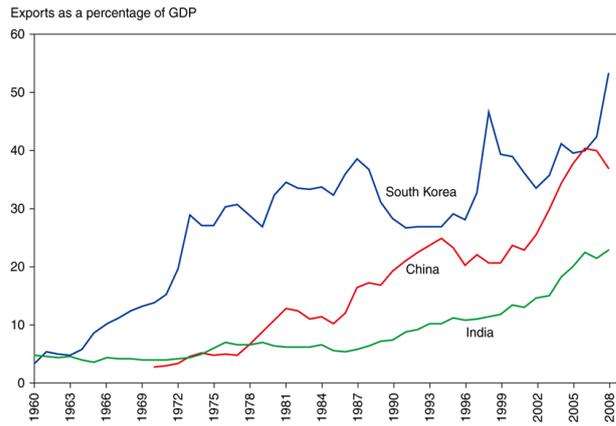
- Has trade liberalization promoted development? The evidence is mixed.
  - Growth rates in Brazil and other Latin American countries have been slower since trade liberalization than they were during import-substituting industrialization.
    - But unstable macroeconomic policies and financial crises contributed to slower growth since the 1980s.
  - Other countries like India have grown rapidly since liberalizing trade in the 1980s, but it is unclear to what degree liberalized trade contributed to growth.
  - Some economists also argue that trade liberalization has contributed to income inequality, as the Heckscher-Ohlin model predicts.

## TRADE AND GROWTH: TAKEOFF IN ASIA

- Instead of import substitution, several countries in East Asia adopted trade policies that promoted exports in targeted industries.
  - Japan, Hong Kong, Taiwan, South Korea, Singapore, Malaysia, Thailand, Indonesia, and China have experienced rapid growth in various export sectors and rapid economic growth in general.
- These high-performance Asian economies generated a high volume of exports and imports relative to total production.



- Their policy reforms were followed by a large increase in openness, as measured by their share of exports in GDP.
  - So it is possible to develop through export-oriented growth.
  - However, Latin American nations such as Mexico and Brazil, which also sharply liberalized trade and shifted toward exports, did not see comparable economic takeoffs.
- These Latin American results suggest that other factors must have played a crucial role in the Asian miracle.



other economic reforms.

- It's unclear if the high volume of exports and imports *caused* rapid economic growth or was merely *correlated* with rapid economic growth.
  - High saving and investment rates could have led to both rapid economic growth in general and rapid economic growth in export sectors.
  - Rapid growth in education led to high literacy and numeracy rates important for a productive labor force.
  - These nations also undertook

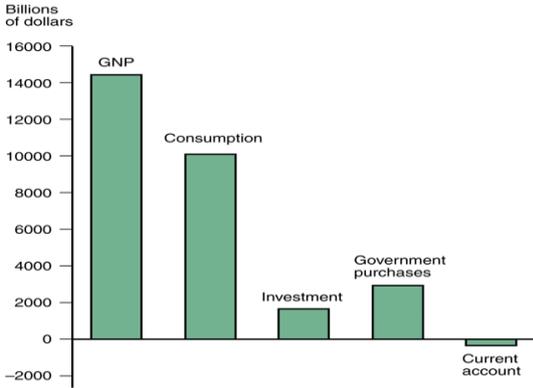
# CHAPTER 13: NATIONAL INCOME ACCOUNTING AND THE BALANCE OF PAYMENTS

## NATIONAL INCOME ACCOUNTS

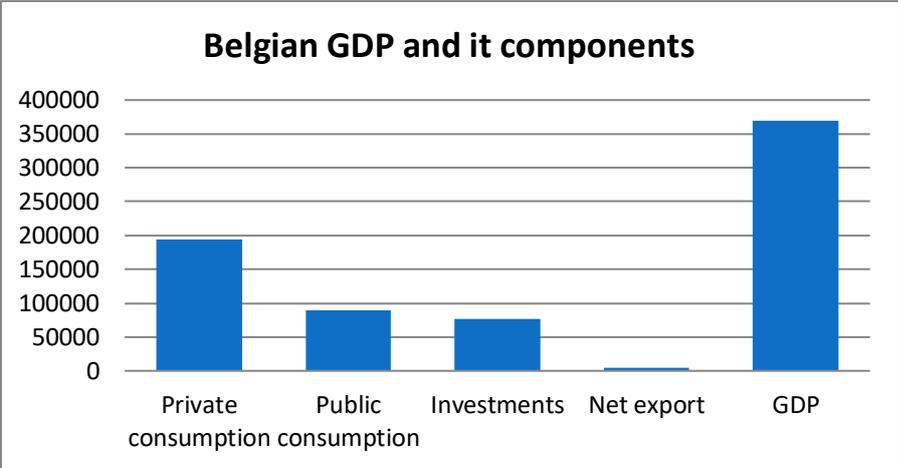
- Records the value of **national income** that results from *production* and *expenditure*.
  - Producers earn income from buyers who spend money on goods and services.
  - The amount of expenditure by buyers = the amount of income for sellers = the value of production.
  - National income is often defined to be the *income earned by a nation's factors of production*.

## NATIONAL INCOME ACCOUNTS: GNP

- **Gross national product (GNP)** is the value of all final goods and services *produced by a nation's factors of production* in a given time period.
  - What are factors of production? Factors that are used to produce goods and services: workers (labor services), physical capital (like buildings and equipment), natural resources and others.
  - The value of final goods and services produced by US-owned factors of production are counted as US GNP.



- GNP is calculated by adding the value of expenditure on final goods and services produced:
  - Consumption: expenditure by domestic consumers
  - Investment: expenditure by firms on buildings & equipment
  - Government purchases: expenditure by governments on goods and services
  - Current account balance (exports minus imports): net expenditure by foreigners on domestic goods and services



## NATIONAL INCOME ACCOUNTS

- GNP is one measure of national income, but a more precise measure of national income is GNP adjusted for following:
  - **Depreciation** of physical capital results in a loss of income to capital owners, so the amount of depreciation is subtracted from GNP.
  - **Unilateral transfers** to and from other countries can change national income: payments of expatriate workers sent to their home countries, foreign aid and pension payments sent to expatriate retirees.
- Another approximate measure of national income is **gross domestic product (GDP)**:
  - Gross domestic product measures the final value of all goods and services that are produced *within a country* in a given time period.
  - $GDP = GNP - \text{payments from foreign countries for factors of production} + \text{payments to foreign countries for factors of production}$

## GNP = EXPENDITURE ON A COUNTRY'S GOODS AND SERVICES

- The national income identity for an open economy is

$$\begin{aligned}
 Y &= C + I + G + EX - IM \\
 &= C + I + G + CA
 \end{aligned}$$

The diagram shows the equation  $Y = C + I + G + EX - IM = C + I + G + CA$ . A bracket under  $C + I + G$  points to a box labeled "Expenditure by domestic individuals and institutions". Another bracket under  $EX - IM$  points to a box labeled "Net expenditure by foreign individuals and institutions".

## EXPENDITURE AND PRODUCTION IN AN OPEN ECONOMY

- $CA = EX - IM = Y - (C + I + G)$
- When production > domestic expenditure, exports > imports: current account > 0 and trade balance > 0
  - when a country exports more than it imports, it earns more income from exports than it spends on imports
  - net foreign wealth is increasing
- When production < domestic expenditure, exports < imports: current account < 0 and trade balance < 0
  - when a country exports less than it imports, it earns less. Someone is willing to lend a country money to buy extra imports, than the revenue for your exports.
    - For the US it's China that lends the US money to buy more imports.
    - For Greece it's Germany, France that lends the money.
  - net foreign wealth is decreasing
- A surplus in your current account, means a deficit in the rest of the balance of payment. A deficit in the current account, means a surplus in the rest of the balance of payment.

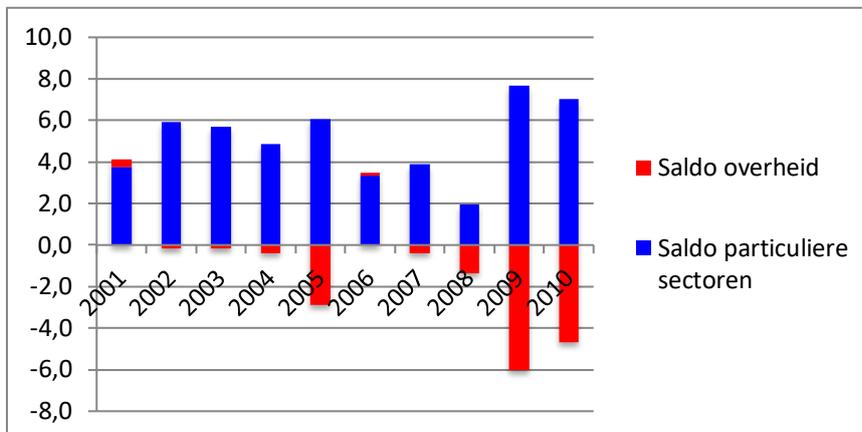
## SAVING AND THE CURRENT ACCOUNT

- National saving ( $S$ ) = national income ( $Y$ ) that is not spent on consumption ( $C$ ) or government purchases ( $G$ ).

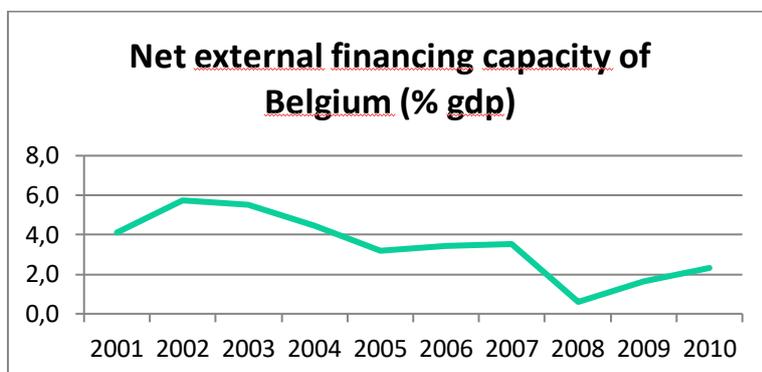
- $S = Y - C - G$
- $S = (Y - C - T) + (T - G)$
- $S = S^p + S^g$

## HOW IS THE CURRENT ACCOUNT RELATED TO NATIONAL SAVING?

- $CA = Y - (C + I + G)$
- $= (Y - C - G) - I$
- $= S - I$ 
  - current account = national saving – investment
  - current account = net foreign investment
- A country that imports more than it exports has low national saving relative to investment.
- $CA = S - I$  or  $I = S - CA$ 
  - Countries can finance investment either by saving or by acquiring foreign funds equal to the current account deficit.
    - a current account deficit implies a financial asset inflow or negative net foreign investment.
  - When  $S > I$ , then  $CA > 0$  so that net foreign investment and financial capital outflows for the domestic economy are positive.
- $CA = S^p + S^g - I$ 
  - $= S^p$  – government deficit –  $I$
  - Government deficit is negative government saving
    - Equal to  $G - T$
  - A high government deficit causes a negative current account balance when other factors remain constant. (=Twin deficit)

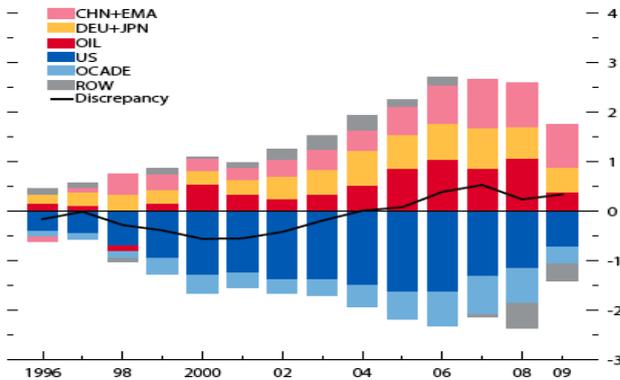


- (Dis)savings of Belgian private and government sector (%gdp):
  - We had always a positive account.



**Figure 4.1. Global Imbalances<sup>1</sup>**  
*(Current account balance in percent of world GDP)*

Global imbalances narrowed sharply in 2009 owing to both cyclical and more lasting developments. Imbalances are projected to widen once again as the global recovery takes hold.



Source: IMF staff calculations.  
<sup>1</sup>CHN+EMA: China, Hong Kong SAR, Indonesia, Korea, Malaysia, Philippines, Singapore, Taiwan Province of China, Thailand; DEU+JPN: Germany and Japan; OIL: Oil exporters; US: United States; OCADE: other current-account-deficit economies; ROW: rest of the world.

## BALANCE OF PAYMENTS ACCOUNTS

- A country's balance of payments accounts for its payments to and its receipts from foreigners.
- An international transaction involves two parties, and each transaction enters the accounts twice: once as a credit (+) and once as a debit (-).
- The balance of payments accounts are separated into 3 broad accounts:
  - **current account:** accounts for flows of goods and services (imports and exports).
  - **capital account:** flows of special categories of assets (capital): typically nonmarket, non-produced, or intangible assets like debt forgiveness, copyrights and trademarks.
  - **financial account:** accounts for flows of financial assets (financial capital).

## EXAMPLE OF BALANCE OF PAYMENTS ACCOUNTING

- You import a fax machine from Olivetti.
- Olivetti deposits your check in a German bank.

---

Fax machine (current account, Germany good import)

-€80

---

Bank deposit (financial account, Germany asset sale)

+€80

---

- You buy lunch in France and pay by credit card.
- French restaurant receives payment from your credit card company.

---

Meal purchase (*current account, Belgium service import*)

–€30

---

Sale of credit card claim (*financial account, Belgium asset sale*)

+€30

---

- You buy a share of BP.
  - BP deposits the money in a Spanish bank.
- 

Stock purchase (*financial account, Spain asset purchase*)

–€90

---

Bank deposit (*financial account, Spain asset sale*)

+€90

---

- EU banks forgive a €50 M debt owed by the government of Argentina through debt restructuring.
  - EU banks who hold the debt thereby reduce the debt by crediting Argentina's bank accounts.
- 

Debt forgiveness (*capital account, EU transfer payment*)

–€50 M

---

Reduction in bank's claims (*financial account, EU asset sale*)

+€50 M

---

## HOW DO THE BALANCE OF PAYMENTS ACCOUNTS BALANCE?

- Due to the double entry of each transaction, the balance of payments accounts will balance by the following equation:
  - *current account* +
  - *capital account* +
  - *financial account* = 0

## BALANCE OF PAYMENTS ACCOUNTS

- The 3 broad accounts are more finely divided:
  - **Current account:** imports and exports
    - merchandise (goods like DVDs)
    - services (payments for legal services, shipping services, tourist meals, etc.)
    - income receipts (interest and dividend payments, earnings of firms and workers operating in foreign countries)
    - net unilateral transfers
      - gifts (transfers) across countries that do not purchase a good or service nor serve as income for goods and services produced
  - **Capital account:** records special transfers of assets, but this is a minor account for the U.S. & Belgium
  - **Financial account:** the difference between sales of domestic assets to foreigners and purchases of foreign assets by domestic citizens.
    - Financial inflow
      - Foreigners loan to domestic citizens by buying domestic assets.
      - Domestic assets sold to foreigners are a credit (+) because the domestic economy acquires money during the transaction.
    - Financial outflow
      - Domestic citizens loan to foreigners by buying foreign assets.
      - Foreign assets purchased by domestic citizens are a debit (–) because the domestic economy gives up money during the transaction.
- **Financial account** has at least 3 subcategories:
  - All other assets: FDI (foreign direct investment), portfolio investment,...
    - Difference between FDI and Portfolio investment: you buy shares of a foreign company, but in the first case you control this share, by the second case you sit down and laid back.
  - **Official (international) reserve assets:** foreign assets held by central banks to cushion against financial instability.
    - Assets include government bonds, currency, gold, and accounts at the International Monetary Fund.
    - Official reserve assets owned by (sold to) foreign central banks are a credit (+) because the domestic central bank can spend more money to cushion against instability.
    - Official reserve assets owned by (purchased by) the domestic central bank are a debit (–) because the domestic central bank can spend less money to cushion against instability.
  - Statistical discrepancy
    - Data from a transaction may come from different sources that differ in coverage, accuracy, and timing.
    - The balance of payments accounts therefore seldom balance in practice.
    - The statistical discrepancy is the account added to or subtracted from the financial account to make it balance with the current account and capital account.

	<b>2011</b>
<b>Current Account</b>	-5242
<b>Current Account Goods &amp; services</b>	-5533
<b>Current Account Goods &amp; services: goods</b>	-8541
<b>Current Account Goods &amp; services: services</b>	3008
<b>Current account Incomes</b>	6817
<b>Current account Incomes: labour</b>	4976
<b>Current account Incomes: investments</b>	1840
<b>Current account Incomes: transfers</b>	-6526
<b>Capital and Financial account</b>	3797
<b>Capital and Financial account: capital balance</b>	-929
<b>Capital and Financial account: financial account</b>	4727
<b>Capital and Financial account: financial account, direct investments</b>	14956
<b>Capital and Financial account: financial account, portfolio investments</b>	-13102
<b>Capital and Financial account: financial account, financial derivatives</b>	-1953
<b>Capital and Financial account: financial account, other</b>	5920
<b>Capital and Financial account: financial account, reserve assets</b>	-1096
<b>Net errors and omissions</b>	1445

- Belgian balance of payments, 2006, NBB:

- UK Balance of Payments Accounts for 2010/11 (million GBP)
  - The UK's current account deficit was £20.8
  - The trade deficit was £10.1 billion
  - The income deficit was £5.2 billion
  - The financial account shows net inward investment of £11.1 billion.
  - The international investment position shows net liabilities of £325.8 billion.

# CHAPTER 14: EXCHANGE RATES AND THE FOREIGN EXCHANGE MARKET

## DEFINITIONS OF EXCHANGE RATES

- Exchange rates are quoted as foreign currency per unit of domestic currency or domestic currency per unit of foreign currency.
  - How much can be exchanged for one dollar? ¥89.40/\$
  - How much can be exchanged for one yen? \$0.011185/¥
  - ➔ Or you have the fixed currency abroad or you take your own currency as the fixed one.
  - ➔ Today: we put the euro as the fixed one. 1€ = 1.3\$.
- Reason why we need exchange rates? Exchange rates allow us to denominate the cost or price of a good or service in a common currency.
  - How much does a Nissan cost? ¥2,500,000
  - Or, ¥2,500,000 x \$0.011185/¥ = \$27,962.50

**TABLE 14-1 Exchange Rate Quotations**

**CURRENCY RATES** www.ft.com/currencydata

Nov 30	Currency	DOLLAR		EURO		POUND		Currency	DOLLAR		EURO		POUND			
		Closing	Day's Change	Closing	Day's Change	Closing	Day's Change		Closing	Day's Change	Closing	Day's Change	Closing	Day's Change		
Argentina	(Peso)	3.9838	-	5.1859	-0.0281	6.2041	0.0172	Poland	(Zloty)	3.0975	-0.0335	4.0321	-0.0657	4.8238	-0.0387	
Australia	(A\$)	1.0427	-0.0014	1.3573	-0.0092	1.6239	0.0024	Romania	(New Leu)	3.3036	0.0152	4.3005	-0.0034	5.1450	0.0378	
Bahrain	(Dinar)	0.3771	0.0000	0.4908	-0.0026	0.5872	0.0017	Russia	(Rouble)	31.5015	0.1090	41.0071	-0.0794	49.0589	0.3047	
Bolivia	(Boliviano)	7.0100	-	9.1253	-0.0495	10.9171	0.0301	Saudi Arabia	(SR)	3.7505	0.0003	4.8822	-0.0261	5.8409	0.0166	
Brazil	(R\$)	1.7199	-0.0097	2.2389	-0.0248	2.6785	-0.0076	Singapore	(S\$)	1.3219	-0.0007	1.7208	-0.0101	2.0586	0.0047	
Canada	(C\$)	1.0271	0.0029	1.3371	-0.0033	1.5996	0.0090	South Africa	(R)	7.0923	-0.0552	9.2324	-0.1223	11.0452	-0.0553	
Chile	(Peso)	487.650	0.4500	634.798	-2.8490	759.442	2.7957	South Korea	(Won)	1159.40	7.0000	1509.25	0.9878	1805.59	15.8568	
China	(Yuan)	6.6670	0.0064	8.6788	-0.0386	10.3829	0.0386	Sweden	(SKr)	7.0326	0.0002	9.1548	-0.0492	10.9523	0.0306	
Colombia	(Peso)	1929.50	12.1500	2511.73	2.2989	3004.91	27.1665	Switzerland	(Sfr)	0.9957	-0.0050	1.2975	-0.0136	1.5522	-0.0035	
Costa Rica	(Colon)	507.690	1.2400	660.886	-1.9565	790.652	4.1088	Taiwan	(T\$)	30.4825	0.0565	39.6806	-0.1410	47.4720	0.2188	
Czech Rep.	(Koruna)	19.1884	0.2149	24.9785	0.1460	29.8831	0.4163	Thailand	(Bt)	30.2300	0.0300	39.3519	-0.1739	47.0787	0.1766	
Denmark	(DKr)	5.7255	0.0297	7.4531	-0.0014	8.9165	0.0708	Tunisia	(Dinar)	1.4622	0.0052	1.9034	-0.0035	2.2772	0.0145	
Egypt	(Egypt L)	5.7900	0.0032	7.5372	-0.0366	9.0371	0.0300	Turkey	(Lira)	1.5074	-0.0013	1.9623	-0.0123	2.3476	0.0046	
Estonia	(Kroon)	12.0197	0.0648	15.6456	-	18.7189	0.1523	UAE	(Dirham)	3.6730	0.0001	4.7813	-0.0258	5.7201	0.0158	
Hong Kong	(HK\$)	7.7657	0.0002	10.1089	-0.0546	12.0939	0.0336	UK (0.6421)*	(£)	1.5574	0.0043	0.8359	-0.0069	-	-	
Hungary	(Forint)	216.720	-0.1010	282.115	-1.6600	337.509	0.7751	One Month		1.5570	0.0000	0.8359	-	-	-	
India	(Rs)	45.8850	-0.0500	59.7308	-0.3890	71.4590	0.1197	Three Month		1.5565	0.0001	0.8360	0.0000	-	-	
Indonesia	(Rupiah)	9034.00	19.0000	11760.0	-38.8227	14069.1	68.3541	One Year		1.5537	0.0006	0.8368	0.0004	-	-	
Iran	(Rial)	10403.0	3.0000	13542.1	-69.4148	16201.1	49.3920	Ukraine	(Hrywnja)	7.9665	-0.0005	10.3704	-0.0568	12.4066	0.0335	
Israel	(Shk)	3.6770	-0.0027	4.7866	-0.0295	5.7264	0.0116	Uruguay	(Peso)	20.0000	-	26.0350	-0.1410	31.1471	0.0861	
Japan	(Y)	83.7700	-0.6100	109.048	-1.3889	130.459	-0.5871	USA	(\$)	-	-	1.3018	-0.0071	1.5574	0.0043	
One Month		83.7290	-0.0022	108.981	0.0002	130.369	-0.0001	One Month		-	-	1.3016	0.0000	1.5570	0.0000	
Three Month		83.6593	-0.0122	108.862	-0.0056	130.212	-0.0116	Three Month		-	-	1.3013	0.0001	1.5565	0.0001	
One Year		83.1080	-0.0465	108.057	0.0349	129.127	-0.0257	One Year		-	-	1.3002	0.0011	1.5537	0.0006	
Kenya	(Shilling)	80.8000	-0.2000	105.181	-0.8315	125.834	0.0368	Venezuela †(Bolivar Fuerte)	4.2947	-	5.5906	-0.0302	6.6883	0.0185		
Kuwait	(Dinar)	0.2828	0.0002	0.3682	-0.0018	0.4405	0.0016	Vietnam	(Dong)	19499.0	1.5000	25382.8	-135.505	30366.8	86.1749	
Malaysia	(MS)	3.1675	0.0150	4.1233	-0.0027	4.9329	0.0369									
Mexico	(New Peso)	12.4789	-0.0832	16.2444	-0.1968	19.4339	-0.0756									
New Zealand	(NZ\$)	1.3442	-0.0005	1.7498	-0.0101	2.0934	0.0050	Euro (0.7682)*	(Euro)	1.3018	-0.0071	-	-	1.1964	0.0098	
Nigeria	(Naira)	150.850	0.1000	196.369	-0.9326	234.926	0.8039	One Month		1.3016	0.0000	-	-	1.1962	-	
Norway	(Nkr)	6.2101	-0.0014	8.0840	-0.0456	9.6713	0.0245	Three Month		1.3013	0.0001	-	-	1.1961	0.0000	
Pakistan	(Rupee)	85.7350	-0.0900	111.606	-0.7223	133.519	0.2289	One Year		1.3002	0.0011	-	-	1.1950	-0.0005	
Peru	(New Sol)	2.8350	0.0065	3.6879	-0.0115	4.4120	0.0222	SDR		-	0.6554	0.0004	0.8531	-0.0041	1.0206	0.0034
Philippines	(Peso)	44.0100	-0.1800	57.2900	-0.5458	68.5390	-0.0903									

Rates are derived from WM/Reuters at 4pm (London time). \* The closing mid-point rates for the Euro and £ against the \$ are shown in brackets. The other figures in the dollar column of both the Euro and Sterling rows are in the reciprocal form in line with market convention. † New Venezuelan Bolivar Fuerte introduced on Jan 1st, 2008. Currency redenominated by 1000. Some values are rounded by the F.T. The exchange rates printed in this table are also available on the internet at <http://www.ft.com/marketsdata>

Euro Locking Rates: Austrian Schilling 13.7603, Belgium/Luxembourg Franc 40.3399, Cyprus 0.585274, Finnish Markka 5.94572, French Franc 6.55957, German Mark 1.95583, Greek Drachma 340.75, Irish Punt 0.787564, Italian Lira 1936.27, Malta 0.4293, Netherlands Guilder 2.20371, Portuguese Escudo 200.482, Slovenia Tolar 239.64, Spanish Peseta 166.386

**Source:** Data from *Financial Times*, December 1, 2010, p. 24.

First line: there is no day's change. Why? It's a fixed exchange rate between the Peso and the Dollar. You keep it on the same level.

## DEPRECIATION AND APPRECIATION

- Depreciation** is a decrease in the value of a currency relative to another currency.
  - A depreciated currency is *less valuable* (less expensive) and therefore can be exchanged for (can buy) a smaller amount of foreign currency.
  - \$1/€ → \$1.20/€ means that the dollar has depreciated relative to the euro. It now takes \$1.20 to buy one euro, so that the dollar is less valuable.
  - The euro has appreciated relative to the dollar: it is now more valuable.
  - ≠ devaluation: a devaluation is decided by the politics (system with an official parity decided by the government), while a depreciation is decided by the market.
    - Devaluation you will only see in situations of more or less fixed exchange rates. If there is a floating exchange rate -> could there be a devaluation between the euro and the dollar? Theoretically yes, but only when there is an official parity between

currencies. Between the dollar and the euro there is no official parity, you can't have a devaluation there.

- **Appreciation** is an increase in the value of a currency relative to another currency.
  - An appreciated currency is *more valuable* (more expensive) and therefore can be exchanged for (can buy) a larger amount of foreign currency.
  - $\$1/\text{€} \rightarrow \$0.90/\text{€}$  means that the dollar has appreciated relative to the euro. It now takes only  $\$0.90$  to buy one euro, so that the dollar is more valuable.
  - The euro has depreciated relative to the dollar: it is now less valuable.
  - $\neq$  revaluation
- ➔ The appreciation of one currency is a depreciation of the other!
- A depreciated currency is less valuable, and therefore it can buy fewer foreign produced goods that are denominated in foreign currency.
  - A Nissan costs  $\text{¥}2,500,000 = \$25,000$  at  $\$0.010/\text{¥}$
  - becomes more expensive  $\$27,962.50$  at  $\$0.011185/\text{¥}$
- A depreciated currency means that imports are more expensive and domestically produced goods and exports are less expensive.
- A depreciated currency lowers the price of exports relative to the price of imports.
- An appreciated currency is more valuable, and therefore it can buy more foreign produced goods that are denominated in foreign currency.
  - A Nissan costs  $\text{¥}2,500,000 = \$27,962.50$  at  $\$0.011185/\text{¥}$
  - becomes less expensive  $\$25,000$  at  $\$0.010/\text{¥}$
- An appreciated currency means that imports are less expensive and domestically produced goods and exports are more expensive.
- An appreciated currency raises the price of exports relative to the price of imports.

## FOREIGN EXCHANGE MARKETS

- Where do we find it? It's not a physical market, it's a market that exist today because there are people connected with each other through internet. All the people together forms the market.
  - NOT stock exchange: it's a physical place where you can buy STOCKS
  - There can be a differences between exchange market in Europe and one in Tokyo -> Arbitrage: buy an currency in the cheapest country and sell it with profit in another country.
  - There is not a physical place, it exist between a connection between the market parties (by Internet).
  - When you look in the newspaper, you can't say this is the price now and I want this price. It's an indicative rate. It's what has come out after 1 day of trading.
  - The price is what comes out at the market (Supply = Demand).
- The set of markets where foreign currencies and other assets are exchanged for domestic ones
  - Institutions buy and sell deposits of currencies or other assets for investment purposes.
- The *daily* volume of foreign exchange transactions was  $\$4.0$  trillion in April 2010
  - up from  $\$500$  billion in 1989.
- Most transactions (85% in April 2010) exchange foreign currencies for U.S. dollars.

## Global foreign exchange market turnover by instrument<sup>1</sup>

Average daily turnover in April, in billions of US dollars

Instrument	1998	2001	2004	2007	2010
<b>Foreign exchange instruments</b>	<b>1,527</b>	<b>1,239</b>	<b>1,934</b>	<b>3,324</b>	<b>3,981</b>
Spot transactions <sup>2</sup>	568	386	631	1,005	1,490
Outright forwards <sup>2</sup>	128	130	209	362	475
Foreign exchange swaps <sup>2</sup>	734	656	954	1,714	1,765
Currency swaps	10	7	21	31	43
Options and other products <sup>3</sup>	87	60	119	212	207
<i>Memo:</i>					
Turnover at April 2010 exchange rates <sup>4</sup>	1,705	1,505	2,040	3,370	3,981
Exchange-traded derivatives <sup>5</sup>	11	12	26	80	166

Statistics made by the bank for international settlements (Bank in Bern (Switzerland) which makes statistics on foreign exchange markets every 3 year).

In that market: Almost 4 trillion dollar that is exchanged.

Instruments:

- Spot transactions: market where there is a price fixed and the transaction is settled immediately. Money goes from the one party to the other. (There is also an spot market for potatoes and other goods).
  - E.g. when you buy a loaf of bread.
- Outright forwards: There is a price fixed, but the transaction will take place in the future.
  - E.g. Sell your dollars on a turn of 3 months. You now know the price of that deal, but you will deliver the dollars after end of the period.
  - An option is not an outright forward transaction!
- Swaps = combination between spot and forward transactions.

## Currency distribution of global foreign exchange market turnover<sup>1</sup>

Percentage shares of average daily turnover in April

Currency	1998	2001	2004	2007	2010
US dollar	86.8	89.9	88.0	85.6	84.9
Euro	...	37.9	37.4	37.0	39.1
Deutsche mark	30.5	...	...	...	...
French franc	5.0	...	...	...	...
ECU and other EMS currencies	16.8	...	...	...	...
Slovak koruna <sup>2</sup>	...	0.0	0.0	0.1	...
Japanese yen	21.7	23.5	20.8	17.2	19.0
Pound sterling	11.0	13.0	16.5	14.9	12.9
<b>All currencies</b>	<b>200.0</b>	<b>200.0</b>	<b>200.0</b>	<b>200.0</b>	<b>200.0</b>

85% of the transactions involves the dollar. (in more than 4 cases out of 5) -> central place in the market

Total = 200%. Why? What the one is selling, is the other buying.

- The

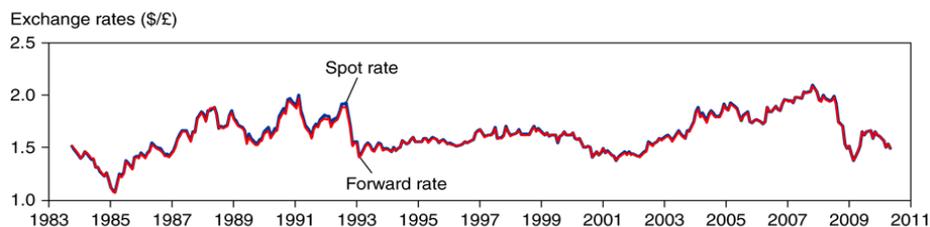
participants:

- Commercial banks and other depository institutions: transactions involve buying/selling of deposits in different currencies for investment purposes.
  - Dealing the most in the foreign exchange market with their bank transactions.
- Non-bank financial institutions (mutual funds, hedge funds, securities firms, insurance companies, pension funds) may buy/sell foreign assets for investment.
- Non-financial businesses conduct foreign currency transactions to buy/sell goods, services and assets.
- Central banks: conduct official international reserves transactions (stock of foreign currency in the central bank of a country).
- Balance of payment: If a foreign pension fund buys some security here, this is an import of capital, a supply of foreign currency. On the other side of the balance of payment you have the need for foreign currency the amount to invest abroad, we need dollars to buy something abroad.

- What is the price? Where the demand and the supply intersect with each other.
- Buying and selling in the foreign exchange market are dominated by commercial and investment banks.
  - Inter-bank transactions of deposits in foreign currencies occur in amounts \$1 million or more per transaction.
  - Central banks sometimes intervene, but the direct effects of their transactions are small and transitory in many countries.
- Computer and telecommunications technology transmit information rapidly and have integrated markets. -> no physical market.
- The integration of financial markets implies that there can be no significant differences in exchange rates across locations.
  - Arbitrage: buy at low price and sell at higher price for a profit.
  - If the euro were to sell for \$1.1 in New York and \$1.2 in London, could buy euros in New York (where cheaper) and sell them in London at a profit.
  - You can also have this in a system with 3, 4,... currencies. If the exchange rates are not the same at different places, you have an incentive for some traders to do the transactions and pull the exchange rates together, in the end you have a system of cross exchange rates.
  - There is also arbitrage in time and forward arbitrage.

## SPOT RATES AND FORWARD RATES

- **Spot rates** are exchange rates for currency exchanges “on the spot,” or when trading is executed in the present.
- **Forward rates** are exchange rates for currency exchanges that will occur at a future (“forward”) date.
  - Forward dates are typically 30, 90, 180, or 360 days in the future.
  - Rates are negotiated between two parties in the present, but the exchange occurs in the future.



The two lines are very closely linked because the forward rate is the predictor of the spot rate.

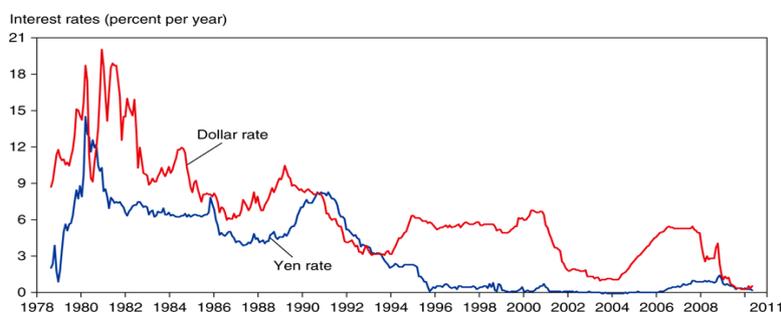
## OTHER METHODS OF CURRENCY EXCHANGE

- **Foreign exchange swaps:** a combination of a spot sale with a forward repurchase.
  - Swaps allow parties to meet each other’s needs for a temporary amount of time and often cost less in fees than separate transactions.
  - For example, suppose Toyota receives \$1 million from American sales, plans to use it to pay its California suppliers in three months, but wants to invest the money in euro bonds in the meantime.
- **Futures contracts:** a contract designed by a *third party* for a *standard* amount of foreign currency delivered/received on a *standard* date. Parallel with the forward rate.
  - Contracts can be bought and sold in markets, and only the current owner is obliged to fulfill the contract.

- **Options contracts:** a contract designed by a *third party* for a *standard* amount of foreign currency delivered/received on or before a *standard* date.
  - Contracts can be bought and sold in markets.
  - A contract gives the owner the option, but not obligation, of buying or selling currency if the need arises.

## THE DEMAND OF CURRENCY DEPOSITS

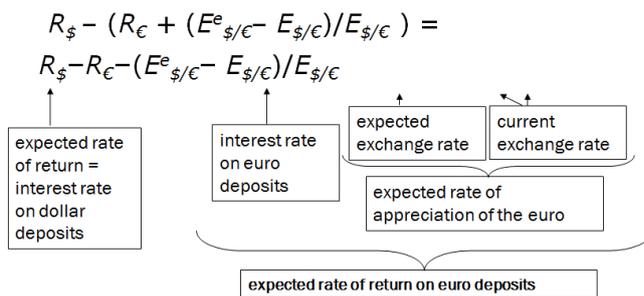
- What influences the demand of (willingness to buy) deposits denominated in domestic or foreign currency?
- Factors that influence the return on assets determine the demand of those assets.
- **Rate of return:** the percentage change in value that an asset offers during a time period.
  - The annual return for \$100 savings deposit with an interest rate of 2% is  $\$100 \times 1.02 = \$102$ , so that the rate of return =  $(\$102 - \$100)/\$100 = 2\%$ .
- **Real rate of return:** inflation-adjusted rate of return,
  - which represents the additional amount of goods & services that can be purchased with earnings from the asset.
  - The real rate of return for the above savings deposit when inflation is 1.5% is  $2\% - 1.5\% = 0.5\%$ . After accounting for the rise in the prices of goods and services, the asset can purchase 0.5% more goods and services after 1 year.
  - Today: or savings have a negative real rate of return, because we get 1% on our saving deposits while the inflation 2%, so there is a negative real rate of return. -> Purchasing Power is affected.
- We therefore say that investors are primarily concerned about the rates of return on currency deposits.
- Rates of return that investors expect to earn are determined by
  - interest rates that the assets will earn
  - expectations about appreciation or depreciation
- A currency deposit's **interest rate** is the amount of a currency that an individual or institution can earn by lending a unit of the currency for a year.
- The rate of return for a deposit in domestic currency is the interest rate that the deposit earns.
- To compare the rate of return on a deposit in domestic currency with one in foreign currency, consider
  - the interest rate for the foreign currency deposit
  - the expected rate of appreciation or depreciation of the foreign currency relative to the domestic currency.



Interest rate differences between dollar rated and yen rated deposits. It's always more interesting to invest in dollar, because the interest rate is higher. BUT you should keep in mind the other aspect (expected rate of appreciation or depreciation).

- **Example**
  - Suppose the interest rate on a dollar deposit is 2%.
  - Suppose the interest rate on a euro deposit is 4%.
  - Does a euro deposit yield a higher expected rate of return?

- Suppose today the exchange rate is \$1/€1, and the expected rate one year in the future is \$0.97/€1 -> depreciation of the euro.
  - \$100 can be exchanged today for €100.
  - These €100 will yield €104 after one year.
  - These €104 are expected to be worth \$0.97/€1 x €104 = \$100.88 in one year.
- The rate of return in terms of dollars from investing in euro deposits is
  - $(\$100.88 - \$100)/\$100 = 0.88\%$ .
- Let's compare this rate of return with the rate of return from a dollar deposit.
  - The rate of return is simply the interest rate.
  - After 1 year the \$100 is expected to yield \$102:  $(\$102 - \$100)/\$100 = 2\%$
- The euro deposit has a lower expected rate of return: thus, *all* investors should be willing to hold dollar deposits and *none* should be willing to hold euro deposits. The differences in interest rate is more than compensated by the depreciation.
- Note that the expected rate of appreciation of the euro was  $(\$0.97 - \$1)/\$1 = -0.03 = -3\%$ .
- We simplify the analysis by saying that the dollar rate of return on euro deposits approximately equals
  - the interest rate on euro deposits plus the expected rate of appreciation of euro deposits
  - $4\% + (-3\%) = 1\% \approx 0.88\%$
  - $R_{\epsilon} + (E_{\$/\epsilon}^e - E_{\$/\epsilon})/E_{\$/\epsilon}$
- The difference in the rate of return on dollar deposits and euro deposits is



- If everybody takes the opportunity to go in dollar instead of in euro, the exchange rate of the dollar will appreciate, so the euro will depreciate, until the opportunity has gone -> Interest rate parity

TABLE 14-3 Comparing Dollar Rates of Return on Dollar and Euro Deposits				
	Dollar Interest Rate	Euro Interest Rate	Expected Rate of Dollar Depreciation Against Euro	Rate of Return Difference Between Dollar and Euro Deposits
Case	$R_{\$}$	$R_{\epsilon}$	$\frac{E_{\$/\epsilon}^e - E_{\$/\epsilon}}{E_{\$/\epsilon}}$	$R_{\$} - R_{\epsilon} - \frac{(E_{\$/\epsilon}^e - E_{\$/\epsilon})}{E_{\$/\epsilon}}$
1	0.10	0.06	0.00	0.04
2	0.10	0.06	0.04	0.00
3	0.10	0.06	0.08	-0.04
4	0.10	0.12	-0.04	0.02

Case 1: everyone flees out of the euro and invests in the dollar, because of the difference of return.

Case 2: interest rate parity -> there is no incentive to move your money from the

dollar to the euro or vice versa.

Case 3: move into the euro because the 4% difference in favor of the dollar is more than compensated by the expected depreciation from the dollar against the euro. Everyone will move into the euro until there is interest parity.

## MODEL OF FOREIGN EXCHANGE MARKETS

- We use the
  - demand of (rate of return on) dollar denominated deposits
  - and the demand of (rate of return on) foreign currency denominated depositsto construct a model of foreign exchange markets.
- This model is in equilibrium when deposits of all currencies offer the same expected rate of return:  
**interest parity.**
  - Interest parity implies that deposits in all currencies are equally desirable assets.
  - Interest parity implies that arbitrage in the foreign exchange market is not possible.
- Interest parity says:  $R_{\$} = R_{\text{€}} + (E_{\$/\text{€}}^e - E_{\$/\text{€}}) / E_{\$/\text{€}}$
- Why should this condition hold? Suppose it didn't.
  - Suppose  $R_{\$} > R_{\text{€}} + (E_{\$/\text{€}}^e - E_{\$/\text{€}}) / E_{\$/\text{€}}$
  - Then no investor would want to hold euro deposits, driving down the demand and price of euros.
  - Then all investors would want to hold dollar deposits, driving up the demand and price of dollars.
  - The dollar would appreciate and the euro would depreciate, increasing the right side until equality was achieved:
  - $R_{\$} > R_{\text{€}} + (E_{\$/\text{€}}^e - E_{\$/\text{€}}) / E_{\$/\text{€}}$

## COVERED INTEREST PARITY

- Covered interest parity relates interest rates across countries and the rate of change between forward exchange rates and the spot exchange rate:  $R_{\$} = R_{\text{€}} + (F_{\$/\text{€}} - E_{\$/\text{€}}) / E_{\$/\text{€}}$  where  $F_{\$/\text{€}}$  is the forward exchange rate.
- We have here a kind of arbitrage system here. What happens in a trading room of a bank? Someone sees on his screen 4% in euro, 2% in dollar (spot rate) and sees also the forward rate.
  - Deposit of 1 year: from the moment that this formula isn't true anymore, for instance that the rate of return involves is bigger than euros, then some people will start to act -> they will go out of the currency with the lower rate of return without having one single risk, because they are covered by the forward rate that can settle now.
  - E.g.: they start with 100 dollar and they go into euro, they earn 4%. In the end they will have 104 euro. The spot rate was 1 to 1 and suppose the forward rate was also 1 to 1, they will be back a 104, where the interest rate was only 2% in dollar and would have only 102. This a clear occasion to earn some profit without taking any risk, because the forward rate is known.
  - What happens if everybody sees this? Everybody flow into the euro and the spot rate will be immediately infected -> euro more expensive, eating out the 2% gain and dollar cheaper, eating out the 2% gain until there is no difference anymore and there is no arbitrage anymore.
- It says that rates of return on dollar deposits and "covered" foreign currency deposits are the same.
  - How could you earn a risk-free return in the foreign exchange markets if covered interest parity did not hold?
  - Covered positions using the forward rate involve little risk.

# CHAPTER 16: PRICE LEVELS AND THE EXCHANGE RATES IN THE LONG RUN

## THE BEHAVIOR OF EXCHANGE RATES

- Long-run models are not intended to be completely realistic descriptions about how exchange rates behave, but ways of representing how market participants may form expectations about future exchange rates and how exchange rates tend to move over long periods.

## LAW OF ONE PRICE

- The law of one price simply says that the *same* good in different competitive markets must sell for the same price, when transportation costs and barriers between those markets are not important.
  - Suppose on the market 1 kg of apples costs 1 euro in the first stall and in the stall next to it, you have to pay 1,2 euro. You will buy in the first stall -> arbitrage.
  - Why? Suppose the price of pizza at one restaurant is \$20, while the price of the *same* pizza at an identical restaurant across the street is \$40.
  - What do you predict will happen? Many people will buy the \$20 pizza, few will buy the \$40 one.
- Due to the price difference, entrepreneurs would have an incentive to buy pizza at the cheap location and sell it at the expensive location for an easy profit.
- Due to strong demand and decreased supply, the price of the \$20 pizza would tend to increase.
- Due to weak demand and increased supply, the price of the \$40 pizza would tend to decrease.
- People would have an incentive to adjust their behavior and prices would tend to adjust until one price is achieved across markets (across restaurants).
- Consider a pizza restaurant in Seattle (United States) and one across the border in Vancouver (Canada).
- The law of one price says that the price of the same pizza (using a common currency to measure the price) in the two cities must be the same if markets are competitive and transportation costs and barriers between markets are not important.
  - $p_{US}^{pizza} = (E_{US\$/C\$}) \times (p_{Canada}^{pizza})$
  - $p_{US}^{pizza}$  = price of pizza in Seattle
  - $p_{Canada}^{pizza}$  = price of pizza in Vancouver
  - $E_{US\$/C\$}$  = U.S. dollar/Canadian dollar exchange rate

## PURCHASING POWER PARITY

- Purchasing power parity is the application of the law of one price across countries for *all* goods and services, or for representative groups (“baskets”) of goods and services.
  - $P_{US} = (E_{US\$/C\$}) \times (P_{Canada})$
  - $P_{US}$  = level of average prices in the U.S.
  - $P_{Canada}$  = level of average prices in Canada
  - $E_{US\$/C\$}$  = U.S. dollar/Canadian dollar exchange rate
- Purchasing power parity (PPP) implies that the exchange rate is determined by levels of average prices
  - $E_{US\$/C\$} = P_{US}/P_{Canada}$
  - If the price level in the U.S. is US\$200 per basket, while the price level in Canada is C\$400 per basket, PPP implies that the C\$/US\$ exchange rate should be C\$400/US\$200 = C\$2/US\$1.

- Predicts that people in all countries have the same purchasing power with their currencies: 2 Canadian dollars buy the same amount of goods as 1 U.S. dollar, since prices in Canada are twice as high.
- This is how it SHOULD be, NOT how it is: the exchange rate that we see in the market, is not always the same as the PPP, but it will tend to an equilibrium. It's a hope that the internal and external PPP will be the same.
- Purchasing power parity (PPP) comes in 2 forms:
  - Absolute PPP: purchasing power parity that has already been discussed. Exchange rates equal the *level* of relative average prices across countries.  $E_{\$/\epsilon} = P_{US}/P_{EU}$
  - Relative PPP: *changes* in exchange rates equal *changes* in prices (inflation) between two periods:  $(E_{\$/\epsilon, t} - E_{\$/\epsilon, t-1})/E_{\$/\epsilon, t-1} = \pi_{US, t} - \pi_{EU, t}$  where  $\pi_t$  = inflation rate from period  $t-1$  to  $t$ .
    - The increase in price, should be matched to the exchange rate, then you will end up in the same situation.

## MONETARY APPROACH TO EXCHANGE RATES

- If you find out what's the reason for inflation higher in the one country than in the other, then you also have an explanation for the movement of exchange rates.
- Fisher:  $M \times V = P \times T$  -> Based on this the quantity theory of money: You start to assume that the velocity of money is constant and the volume of transactions is also constant. Next assume is that there is a causal relationship between the money supply and your price level. If your money supply doubles, your prices also doubles.
  - The change in the price level compare to the change in the price level of another country, gives you an idea about what you expect relatively for your exchange rate. But this price level difference is explained by your money supply (which grow is some countries faster than in that other country)
  - By creating more money, you create inflation and its currency become weaker (depreciate) against the currency of another country, that is not so much creating money and inflation.
- Monetary approach to the exchange rate: uses monetary factors to predict how exchange rates adjust in the long run, based on the absolute version of PPP.
  - It predicts that levels of average prices across countries adjust so that the quantity of real monetary assets supplied will equal the quantity of real monetary assets demanded:
    - $P_{US} = M_{US}^s / L(R_{\$, Y_{US}})$
    - $P_{EU} = M_{EU}^s / L(R_{\epsilon, Y_{EU}})$
- To the degree that PPP holds and to the degree that prices adjust to equate the quantity of real monetary assets supplied with the quantity of real monetary assets demanded, we have the following prediction:
- The exchange rate is determined in the long run by prices, which are determined by the relative supply and demand of real monetary assets in money markets across countries. -> monetary theory.
- Predictions about changes in
  - *Money supply*: a permanent rise in the domestic money supply
    - causes a proportional increase in the domestic price level,
    - thus causing a proportional depreciation in the domestic currency (through PPP).
  - *Interest rates*: a rise in domestic interest rates
    - lowers the demand of real monetary assets,
    - and is associated with a rise in domestic prices,
    - thus causing a proportional *depreciation* of the domestic currency (through PPP).
  - *Output level*: a rise in the domestic level of production and income (output)
    - raises domestic demand of real monetary assets,

- and is associated with a decreasing level of average domestic prices (for a fixed quantity of money supplied),
  - thus causing a proportional appreciation of the domestic currency (through PPP).
- All 3 changes affect money supply or money demand, and cause prices to adjust so that the quantity of real monetary assets supplied matches the quantity of real monetary assets demanded, and cause exchange rates to adjust according to PPP.
- A change in the money supply results in a change in the level of average prices.
- A change in the *growth rate* of the money supply results in a change in the *growth rate* of prices (inflation).
  - A constant growth rate in the money supply results in a persistent growth rate in prices (persistent inflation) at the same constant rate, when other factors are constant.
  - Inflation does not affect the productive capacity of the economy and real income from production in the long run.
  - Inflation, however, does affect nominal interest rates. How?

## THE FISHER EFFECT

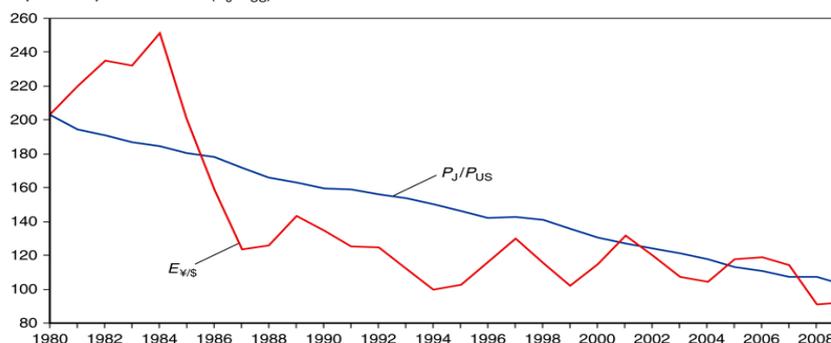
- The Fisher effect (named affect Irving Fisher) describes the relationship between nominal interest rates and inflation to get the real interest rate.
  - Derive the Fisher effect from the interest parity condition:  

$$R_{\$} - R_{\text{€}} = (E^e_{\$/\text{€}} - E_{\$/\text{€}}) / E_{\$/\text{€}}$$
  - If financial markets expect (relative) PPP to hold, then expected exchange rate changes will equal expected inflation between countries:  $(E^e_{\$/\text{€}} - E_{\$/\text{€}}) / E_{\$/\text{€}} = \pi^e_{\text{US}} - \pi^e_{\text{EU}}$
  - Therefore,  $R_{\$} - R_{\text{€}} = \pi^e_{\text{US}} - \pi^e_{\text{EU}}$
  - The Fisher effect: a rise in the domestic inflation rate causes an equal rise in the interest rate on deposits of domestic currency in the long run, when other factors remain constant.

## SHORTCOMINGS OF PPP

- Why is the exchange rate that we see in the newspaper, not the same as the PPP?
- There is little empirical support for absolute purchasing power parity.
  - The prices of identical commodity baskets, when converted to a single currency, differ substantially across countries.
- Relative PPP is more consistent with data, but it also performs poorly to predict exchange rates.

Exchange rate ( $E_{\$/\text{¥}}$ ),  
Japan-U.S. price level ratio ( $P_{\text{J}}/P_{\text{US}}$ )



The Yen/Dollar Exchange Rate and Relative Japan-U.S. Price Levels, 1980–2009

In the long run, the PPP is a good predictor of the exchange rate.

- Reasons why PPP may not be accurate: the law of one price may not hold because of
  - Trade barriers and nontradable (goods and services that usually are not traded internationally, which are traded inside the borders of your country) products

- Transport costs and governmental trade restrictions make trade expensive and in some cases create nontradable goods or services.
- Services are often not tradable: services are generally offered within a limited geographic region (for example, haircuts). -> pure internal.
  - Balance of payment: nontradables are in the basket that we use to calculate PPP, but you don't need foreign currency to buy it, or won't sell it abroad. The basket covers non tradables and tradables. The exchange rate in the market is determined by the supply and demand of foreign currency. This is covered by a part of the basket (tradables) but also involves financial transactions (capital import and exports).
  - There is no impact on what the exchange rate should be, but there is impact, because there is a supply and demand. The opposites: if there happens something in the non trade sector (haircut doubles in price), the basket get more expensive. This should be an impact on the exchange rate, but it hasn't because its non tradable.
- The greater the transport costs, the greater the range over which the exchange rate can deviate from its PPP value.
- One price need not hold in two markets.
- Imperfect competition may result in price discrimination: "pricing to market."
  - A firm sells the same product for different prices in different markets to maximize profits, based on expectations about what consumers are willing to pay.
  - One price need not hold in two markets.
- Differences in the measure of average prices for goods and services
  - levels of average prices differ across countries because of differences in how representative groups ("baskets") of goods and services are measured.
  - Because measures of groups of goods and services are different, the measure of their average prices need not be the same.
  - One price need not hold in two markets.

## LAW OF ONE PRICE FOR HAMBURGERS?

The hamburger standard					
	Big Mac prices		Implied PPP <sup>6</sup> of the dollar	Actual exchange rate: Jan 30 <sup>th</sup>	Under (-)/over(+) Valuation against the dollar,%
	in local currency	in dollars			
United States <sup>7</sup>	\$3.54	3.54	-	-	-
Argentina	Peso 11.50	3.30	3.25	3.49	-7
Australia	A\$3.45	2.19	0.97	1.57	-38
Brazil	Real 8.02	3.45	2.27	2.32	-2
Britain	£2.29	3.30	1.55 <sup>8</sup>	1.44 <sup>3</sup>	-7
Canada	C\$4.16	3.36	1.18	1.24	-5
Chile	Peso 1.550	2.51	438	617	-29
China	Yuan 12.5	1.83	3.53	6.84	-48
Czech Republic	Koruna 65.94	3.02	18.6	21.9	-15
Denmark	DKK 29.5	5.07	8.33	5.82	43
Egypt	Pound 13.0	2.34	3.67	5.57	-34
Euro areas <sup>5</sup>	€3.42	4.38	1.04**	1.28**	24
Hong Kong	HK\$13.3	1.72	3.76	7.75	-52
Hungary	Forint 680	2.92	192	233	-18
Indonesia	Rupiah 19.800	1.74	5,593	11,380	-51
Israel	Shekel 15.0	3.69	4.24	4.07	4
Japan	¥290	3.23	81.9	89.8	-9
Malaysia	Ringgit 5.50	1.52	1.55	3.61	-57
Mexico	Peso 33.0	2.30	9.32	14.4	-35
New Zealand	NZ\$4.90	2.48	1.38	1.97	-30
Norway	Kroner 40.0	5.79	11.3	6.61	63
Peru	SoI 8.06	2.54	2.28	3.18	-28
Philippines	Peso 98.0	2.07	27.7	47.4	-42
Poland	Zloty 7.00	2.01	1.98	3.48	-43
Russia	Ruble 62.0	1.73	17.5	35.7	-51
Saudi Arabia	Riyal 10.0	2.66	2.82	3.75	-25
Singapore	S\$3.95	2.61	1.12	1.51	-26
South Africa	Rand 16.95	1.66	4.79	10.2	-53
South Korea	Won 3,300	2.39	932	1,380	-32
Sweden	SKR 38.0	4.58	10.7	8.30	29
Switzerland	CHF 6.50	5.60	1.84	1.16	58
Taiwan	NT\$75.0	2.23	21.2	33.6	-37
Thailand	Baht 62.0	1.77	17.5	35.0	-50
Turkey	Lire 5.15	3.13	1.45	1.64	-12

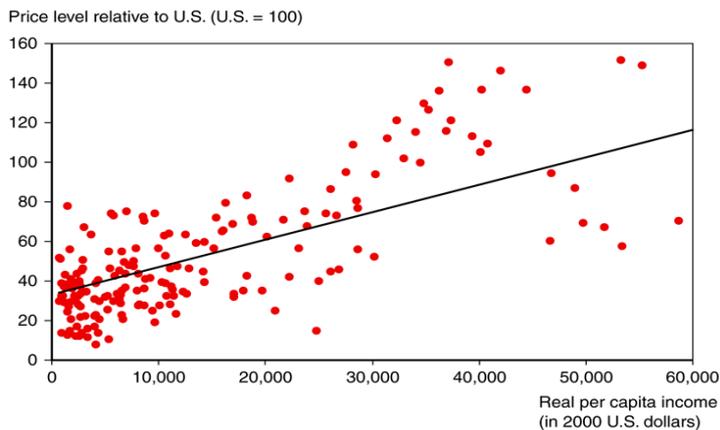
\*Purchasing power parity: local price divided by price in United States; <sup>1</sup>Average of New York, Atlanta, Chicago, and San Francisco; <sup>2</sup>Dollars per pound; <sup>3</sup>Weighted average of prices in euro area; <sup>4</sup>Dollars per euro.  
Sources: McDonald's; the Economist, February 4, 2010. Exchange rates are local currency per dollar, except where noted.

Big mac index: application of the absolute purchasing power parity approach. It's the most reliable predictor of long term exchange rates. What is the link with PPP?

- The price should be the same in all the countries that are in the list.
- Price in the Euro area: 3,42 Euros, and in the United States: 3,54 Dollar. What will be the PPP?
- The PPP is the exchange rate that makes your internal and external purchasing power equal.
- PPP between euro and dollar = 1,04. It's the price in dollar/price in euro. This is the exchange rate, not the actual exchange rate, but the constructive exchange rate, equalizing the purchasing power in both countries.

- Difference with PPP we've seen? In this basket it's only an Hamburger, while we talk about basket of goods and services.
- If we compare this PPP to the actual exchange rate, the exchange rate in the market? The euro is more expensive in reality, than predicted by the Big mac index, so it's overvalued. If you divided 1,28 by 1,04 you get, an overvaluing of the euro against the dollar of 24%.
- Lesson? The one country is more overvalued/undervalued than the others.

## PRICE LEVELS AND REAL INCOMES, 2007



- Balassa Samuelson effect: When you go to a poor country can immediately see that the prices are much lower in those countries. The richer the country gets, the higher the price level.
  - Explanation: There is a difference between the tradables (goods and services that are exchanged between border, there is international trade) and the non tradables (e.g. a haircut).
  - If you then look at productivity: In the tradable sector,

productivity can be very different across countries. The prices should be the same, but e.g. a car in rich countries is made with relatively less labor, but it's very productive. It's very capital intensive, involving a little bit of labor (10-15% of the price). The same car made in a poor country is made with relatively more labor, because this country is labor intensive. They need more people, because they are less productive.

- If you look at the wages: if you are highly productive, the wages are higher and are in poor countries relatively low.

## THE REAL EXCHANGE RATE APPROACH TO EXCHANGE RATES

- Because of the shortcomings of PPP, economists have tried to generalize the monetary approach to PPP to make a better theory.
- The real exchange rate is the *rate of exchange for goods and services* across countries.
  - In other words, it is the relative value/price/cost of goods and services across countries.
  - For example, it is the dollar price of a European group of goods and services relative to the dollar price of an American group of goods and services:
- $q_{US/EU} = (E_{\$/\text{€}} \times P_{EU}) / P_{US}$ 
  - If the EU basket costs €100, the U.S. basket costs \$120, and the nominal exchange rate is \$1.20 (should be the PPP) per euro, then the real exchange rate is 1 U.S. basket per 1 EU basket.
  - A real depreciation of the value of U.S. products means a fall in a dollar's purchasing power of EU products relative to a dollar's purchasing power of U.S. products.
    - This implies that U.S. goods become less expensive and less valuable relative to EU goods.
    - This implies that the value of U.S. goods relative to value of EU goods falls.
  - A real appreciation of the value of U.S. products means a rise in a dollar's purchasing power of EU products relative to a dollar's purchasing power of U.S. products.

- This implies that U.S. goods become more expensive and more valuable relative to EU goods.
    - This implies that the value of U.S. goods relative to value of EU goods rises.
- According to PPP, exchange rates are determined by relative average prices:
  - $E_{\$/\epsilon} = P_{US}/P_{EU}$
- According to the more general real exchange rate approach, exchange rates may also be influenced by the real exchange rate:
  - $E_{\$/\epsilon} = q_{US/EU} \times P_{US}/P_{EU}$
- What influences the real exchange rate?
  - A change in relative demand of U.S. products
    - An increase in relative demand of U.S. products causes the value (price) of U.S. goods relative to the value (price) of foreign goods to rise.
    - A real appreciation of the value of U.S. goods:  $P_{US}$  rises relative to  $E_{\$/\epsilon} \times P_{EU}$
    - The real appreciation of the value of U.S. goods makes U.S. exports more expensive and imports into the U.S. less expensive (thereby reducing the relative quantity demanded of U.S. products).
    - A decrease in relative demand of U.S. products causes a real depreciation of the value of U.S. goods.
  - A change in relative supply of U.S. products
    - An increase in relative supply of U.S. products (caused by an increase in U.S. productivity) causes the price/cost of U.S. goods relative to the price/cost of foreign goods to fall.
    - A real depreciation of the value of U.S. goods:  $P_{US}$  falls relative to  $E_{\$/\epsilon} \times P_{EU}$
    - The real depreciation of the value of U.S. goods makes U.S. exports less expensive and imports into the U.S. more expensive (thereby increasing relative quantity demanded to match increased relative quantity supplied).
    - A decrease in relative supply of U.S. products causes a real appreciation of the value of U.S. goods.
- The real exchange rate is a more general approach to explain exchange rates. Both monetary factors and real factors influence nominal exchange rates:
  - 1a. Increases in *monetary levels* lead to temporary inflation and changes in expectations about inflation.
  - 1b. Increases in *monetary growth rates* lead to persistent inflation and changes in expectations about inflation.
  - 2a. Increases in *relative demand* of domestic products lead to a real appreciation.
  - 2b. Increases in *relative supply* of domestic products lead to a real depreciation.
- What are the effects on the nominal exchange rate?  $E_{\$/\epsilon} = q_{US/EU} \times P_{US}/P_{EU}$ 
  - When only monetary factors change and PPP holds, we have the same predictions as before.
    - No changes in the real exchange rate occurs.
  - When factors influencing real output change, the real exchange rate changes.
    - With an increase in relative demand of domestic products, the real exchange rate adjusts to determine nominal exchange rates.
    - With an increase in relative supply of domestic products, the situation is more complex.
- With an increase in the relative supply of domestic products, the real exchange rate adjusts to make the price/cost of domestic goods depreciate, but the relative amount of domestic output also increases.
  - This second effect increases the demand of real monetary assets in the domestic economy:
 
$$P_{US} = M^s_{US}/L(R_{\$/\epsilon}, Y_{US})$$

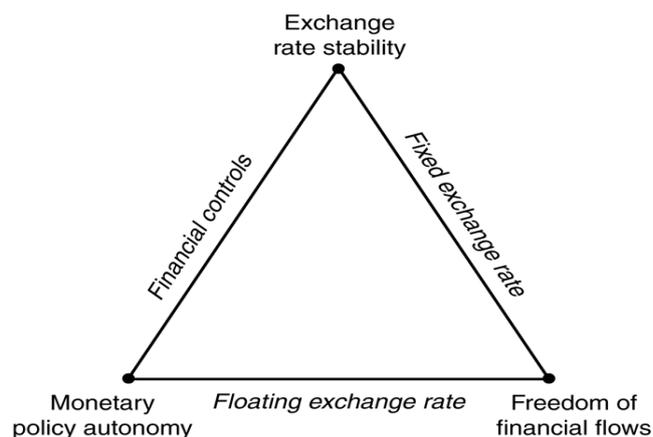
- Thus the level of average domestic prices is predicted to decrease relative to the level of average foreign prices.
- The effect on the nominal exchange rate is ambiguous:  $E_{\$/\epsilon} = q_{US/EU} \times P_{US}/P_{EU}$
- When economic changes are influenced only by monetary factors, and when the assumptions of PPP hold, nominal exchange rates are determined by PPP.
- When economic changes are caused by factors that affect real output, exchange rates are not determined by PPP only, but are also influenced by the real exchange rate.

# CHAPTER 19: INTERNATIONAL MONETARY SYSTEMS: AN HISTORICAL OVERVIEW

## MACROECONOMIC GOALS

- “Internal balance” describes the macroeconomic goals of producing at **potential output** (at “full employment”) and of **price stability** (low inflation).
  - An unsustainable use of resources (overemployment) tends to increase prices; an ineffective use of resources (underemployment) tends to decrease prices.
- Volatile aggregate demand and output tend to create volatile prices.
  - Price level movements reduce the economy’s efficiency by making the real value of the monetary unit less certain and thus a less useful guide for economic decisions.
- “External balance” achieved when a current account is
  - neither so deeply in deficit that the country may be unable to repay its foreign debts,
  - nor so strongly in surplus that foreigners are put in that position.
    - For example, pressure on Japan in the 1980s and China in the 2000s.
- An intertemporal budget constraint limits each country’s spending over time to levels that it can repay (with interest).

## THE OPEN-ECONOMY TRILEMMA



- A country that fixes its currency’s exchange rate while allowing free international capital movements gives up control over domestic monetary policy.
  - A country that fixes its exchange rate can have control over domestic monetary policy if it restricts international financial flows so that interest parity  $R = R^*$  need not hold.
  - Or a country can allow international capital to flow freely and have control over domestic monetary policy if it allows the exchange rate to float.

- Impossible for a country to achieve more than two items from the following list:
  - Exchange rate stability.
  - Monetary policy oriented toward domestic goals.
  - Freedom of international capital movements.

## MACROECONOMIC POLICY UNDER THE GOLD STANDARD 1870–1914

- The gold standard from 1870 to 1914 and after 1918 had mechanisms that prevented flows of gold reserves (the balance of payments) from becoming too positive or too negative.
  - Prices tended to adjust according the amount of gold circulating in an economy, which had effects on the flows of goods and services: the current account.
- Fixed exchange rate, because every country set a price on a gram of gold.
- **Price-specie-flow mechanism** is the adjustment of prices as gold (“specie”) flows into or out of a country, causing an adjustment in the flow of goods.

- An inflow of gold tends to inflate prices.
- An outflow of gold tends to deflate prices.
- If a domestic country has a current account surplus in excess of the nonreserve financial account, gold earned from exports flows into the country—raising prices in that country and lowering prices in foreign countries.
  - Goods from the domestic country become expensive and goods from foreign countries become cheap, reducing the current account surplus of the domestic country and the deficits of the foreign countries.
- Thus, price-specie-flow mechanism of the gold standard could automatically reduce current account surpluses and deficits, achieving a measure of external balance for all countries.

## INTERWAR YEARS: 1918–1939

- The gold standard was stopped in 1914 due to war, but after 1918 it was attempted again.
  - The U.S. reinstated the gold standard from 1919 to 1933 at \$20.67 per ounce and from 1934 to 1944 at \$35.00 per ounce (a devaluation of the dollar).
  - The U.K. reinstated the gold standard from 1925 to 1931.
- But countries that adhered to the gold standard for the longest time, without devaluing their currencies, suffered most from reduced output and employment during the 1930s.

## BRETTON WOODS SYSTEM 1944–1973

- In July 1944, 44 countries met in Bretton Woods, NH, to design the Bretton Woods system:
  - a fixed exchange rate against the U.S. dollar and a fixed dollar price of gold (\$35 per ounce).
- They also established other institutions:
  - The International Monetary Fund
  - The World Bank
  - General Agreement on Trade and Tariffs (GATT), the predecessor to the World Trade Organization (WTO).

## INTERNATIONAL MONETARY FUND

- The IMF was constructed to lend to countries with persistent balance of payments deficits (or current account deficits), and to approve of devaluations.
  - Loans were made from a fund paid for by members in gold and currencies.
  - Each country had a quota, which determined its contribution to the fund and the maximum amount it could borrow.
  - Large loans were made conditional on the supervision of domestic policies by the IMF: **IMF conditionality**.
  - Devaluations could occur if the IMF determined that the economy was experiencing a “fundamental disequilibrium.”
- Due to borrowing and occasional devaluations, the IMF was believed to give countries enough flexibility to attain an external balance, yet allow them to maintain an internal balance and stable exchange rates.
  - The volatility of exchange rates during 1918–1939, caused by devaluations and the vagaries of the gold standard, was viewed as a source of economic instability.

## BRETTON WOODS SYSTEM

- In order to avoid sudden changes in the financial account (possibly causing a balance of payments crisis), countries in the Bretton Woods system often prevented flows of financial assets across countries.
- Yet they encouraged flows of goods and services because of the view that trade benefits all economies.
  - Currencies were gradually made convertible (exchangeable) between member countries to encourage trade in goods and services valued in different currencies.
- Under a system of fixed exchange rates, all countries but the U.S. had ineffective monetary policies for internal balance.
- The principal tool for internal balance was fiscal policy (government purchases or taxes).
- The principal tools for external balance were borrowing from the IMF, restrictions on financial asset flows, and infrequent changes in exchange rates.

## POLICIES FOR INTERNAL AND EXTERNAL BALANCE

- Under the fixed exchange rates of the Bretton Woods system, devaluations were supposed to be infrequent, and fiscal policy was supposed to be the main policy tool to achieve both internal and external balance.
- But in general, fiscal policy cannot attain both internal balance and external balance at the same time.
- A devaluation, however, can attain both internal balance and external balance at the same time.
- Under the Bretton Woods system, policy makers generally used fiscal policy to try to achieve internal balance for political reasons.
- Thus, an inability to adjust exchange rates left countries facing external imbalances over time.
  - Infrequent devaluations or revaluations helped restore external and internal balance, but speculators also tried to anticipate them, which could cause greater internal or external imbalances.

## U.S. EXTERNAL BALANCE PROBLEMS UNDER BRETTON WOODS

- The collapse of the Bretton Woods system was caused primarily by imbalances of the U.S. during the 1960s and 1970s.
  - The U.S. current account surplus became a deficit in 1971.
  - Rapidly increasing government purchases increased aggregate demand and output, as well as prices.
  - Rising prices and a growing money supply caused the U.S. dollar to become overvalued in terms of gold and in terms of foreign currencies.
- Another problem was that as foreign economies grew, their need for official international reserves to maintain fixed exchange rates grew as well.
- But this rate of growth was faster than the growth rate of the gold reserves that central banks held.
  - Supply of gold from new discoveries was growing slowly.
  - Holding dollar-denominated assets was the alternative.
- At some point, dollar-denominated assets held by foreign central banks would be greater than the amount of gold held by the Federal Reserve.
- The Federal Reserve would eventually not have enough gold: foreigners would *lose confidence* in the ability of the Federal Reserve to maintain the fixed price of gold at \$35/ounce, and therefore would rush to redeem their dollar assets before the gold ran out.

- This problem is similar to what any central bank may face when it tries to maintain a fixed exchange rate.
- If markets perceive that the central bank does not have enough official international reserve assets to maintain a fixed rate, a balance of payments crisis is inevitable.

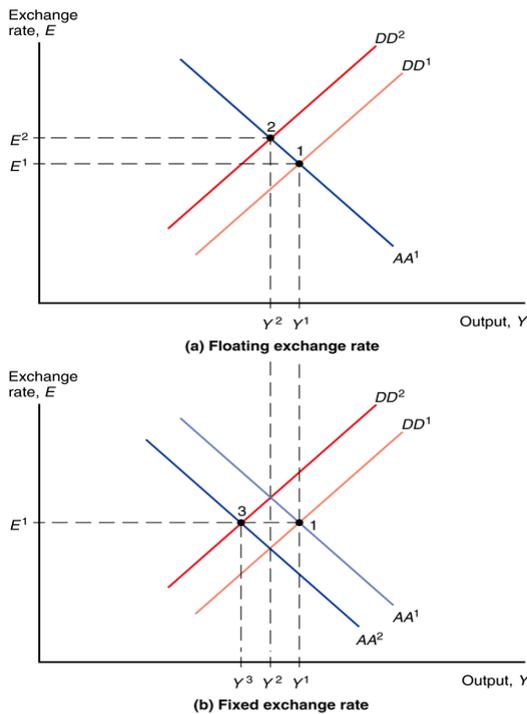
## COLLAPSE OF THE BRETTON WOODS SYSTEM

- The imbalances of the U.S., in turn, caused speculation about the value of the U.S. dollar, which caused imbalances for other countries and made the system of fixed exchange rates harder to maintain.
  - Financial markets had the perception that the U.S. economy was experiencing a “fundamental disequilibrium” and that a devaluation would be necessary.
- The U.S. devalued its dollar in terms of gold in December 1971 from \$35 to \$38/ounce.
  - = coordinated devaluation of the dollar against foreign currencies of about 8%.
- Speculation about another devaluation occurred: European central banks sold huge quantities of European currencies in early February 1973, but closed markets afterwards.
- Central banks in Japan and Europe stopped selling their currencies and stopped purchasing of dollars in March 1973, and allowed demand and supply of currencies to push the value of the dollar downward.
- The Bretton Woods system collapsed in 1973 because central banks were unwilling to continue to buy overvalued dollar-denominated assets and to sell undervalued foreign currency-denominated assets.
- In 1973, central banks thought they would temporarily stop trading in the foreign exchange market and would let exchange rate adjust to supply and demand, and then would re-impose fixed exchange rates soon.
- But no new global system of fixed rates was started again.

## CASE FOR FLOATING EXCHANGE RATES

- Monetary policy autonomy
  - Without a need to trade currency in foreign exchange markets, central banks are more free to influence the domestic money supply, interest rates, and inflation.
  - Central banks can more freely react to changes in aggregate demand, output, and prices in order to achieve internal balance.
- Automatic stabilization
  - Flexible exchange rates change the prices of a country’s products and help reduce “fundamental disequilibria.”
  - One fundamental disequilibrium is caused by an excessive increase in money supply and government purchases, leading to inflation, as we saw in the US during 1965–1972.
  - Inflation causes the currency’s purchasing power to fall, both domestically and internationally, and flexible exchange rates can automatically adjust to account for this fall in value, as purchasing power parity predicts.
  - Another fundamental disequilibrium could be caused by a change in aggregate demand for a country’s products.
  - Flexible exchange rates would automatically adjust to stabilize high or low aggregate demand and output, thereby keeping output closer to its normal level and also stabilizing price changes in the long run.
  - In the long run, a real depreciation of domestic products occurs as prices fall (due to low aggregate demand, output, and employment) under fixed exchange rates.

- In the short run and long run, a real depreciation of domestic products occurs through a nominal depreciation under flexible exchange rates.

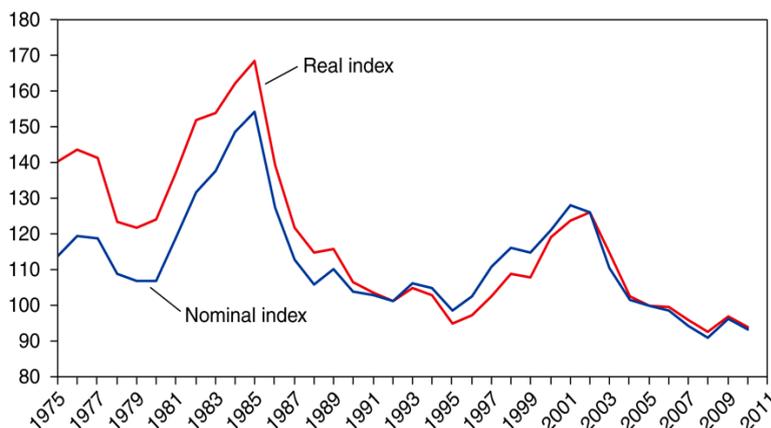


- Fixed exchange rates cannot survive for long in a world with divergent macroeconomic policies and other changes that affect national aggregate demand and national income differently.
- Flexible exchange rates may also prevent speculation in some cases.
  - Fixed exchange rates are unsustainable if markets believe that the central bank does not have enough official international reserves.
- Symmetry (not possible under Bretton Woods)
  - The U.S. is now allowed to adjust its exchange rate, like other countries.
  - Other countries are allowed to adjust their money supplies for macroeconomic goals, like the U.S. could.

## SINCE 1973

- In 1975, IMF members met in Rambouillet, France to allow flexible exchange rates, but to prevent “erratic fluctuations.”
- In 1976 in Kingston, Jamaica, they amended the articles of agreement for IMF membership to formally endorse flexible rates,
  - but prevented members from “manipulating exchange rates ... to gain an unfair competitive advantage”: no expenditure-switching policies were allowed.
  - The articles allowed “surveillance” of members by other members to be sure they were acting fairly.
- Due to contractionary monetary policy and expansive fiscal policy in the U.S., the dollar appreciated by about 50% relative to 15 currencies from 1980 to 1985.
  - This contributed to a growing current account deficit by making imports cheaper and U.S. goods more expensive.

U.S. dollar effective exchange rate index

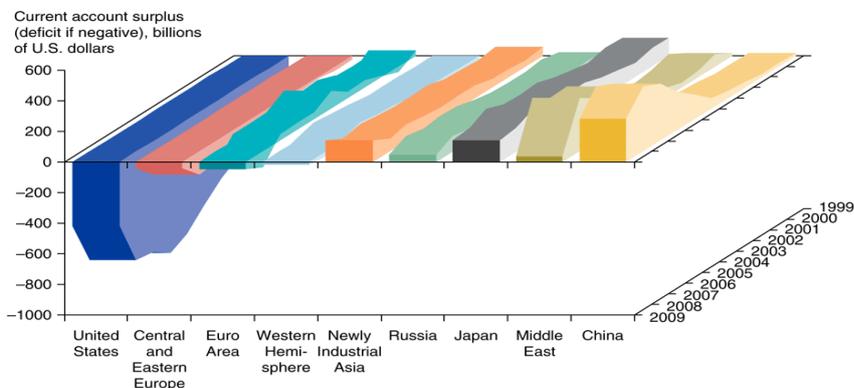


- To reduce the value of the U.S. \$, the U.S., Germany, Japan, Britain, and France announced in 1985 that their central banks would jointly intervene in the foreign exchange markets in order to reduce the value of the dollar.
  - The dollar dropped sharply the next day and continued to drop as the U.S. continued a more expansionary monetary policy, pushing down interest rates.

- The agreement was called the Plaza Accords, because it was announced at the Plaza Hotel in New York.
- After the value of the dollar fell, countries were interested in stabilizing exchange rates.
  - U.S., Germany, Japan, Britain, France, and Canada announced renewed cooperation in 1987, pledging to stabilize exchange rates.
  - They calculated zones of about  $\pm 5\%$  around which current exchange rates were allowed to fluctuate.
  - The agreement was called the Louvre Accords, because it was announced at the Louvre in Paris.
- Many fixed exchange rate systems have nonetheless developed since 1973.
  - European monetary system and euro zone.
  - The Chinese central bank currently fixes the value of its currency.
  - ASEAN countries have considered a fixed exchange rates and policy coordination.
- No system is right for all countries at all times.

## MACROECONOMIC INTERDEPENDENCE UNDER FLOATING EXCHANGE RATES

- Previously, we assumed that countries are “small” in that their policies do not affect world markets.
  - For example, a depreciation of the domestic currency was assumed to have no significant influence on aggregate demand, output, and prices in foreign countries.
  - For countries like Costa Rica, this may be an accurate description.
- However, large economies like the U.S., EU, Japan, and China are interdependent because policies in one country affect other economies.
- In fact, the U.S. has depended on saved funds from many countries, while it has borrowed heavily.
  - The U.S. has run a current account deficit for many years due to its low saving and high investment expenditure.



- Global External Imbalances, 1999–2009