

# International Trade: Costs and Benefits

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# Issues

- ▶ Why do countries trade?
- ▶ Is trade beneficial?

## Concerns about trade

### Imports cost jobs

*"It requires about 2.5 million full-time workers to produce \$100 billion worth of exportable goods and services. Since the rest of the world has been running a \$100 billion trade surplus with the United States, at least 2.5 million workers in the rest of the world owe their jobs to that surplus." – Lester Thurow*

### Trade reduces wages

*"Companies that produce goods in foreign countries to take advantage of cheap labor should not be permitted to **dictate the wages** paid to American workers." – Philadelphia Inquirer*

### Trade costs "good" manufacturing jobs

# Competitiveness

How can we compete with low wage countries?

*Each nation is “like a big corporation competing in the global marketplace” - President Clinton*

Competitiveness is a major concern when it comes to

- ▶ regulation
- ▶ wage setting
- ▶ taxes
- ▶ trade restrictions

## Concerns about trade

Most of the above concerns are (largely) based on a misunderstanding.

# Comparative Advantage

# Comparative Advantage

The key benefit of trade: countries can **specialize** in what they are particularly good at.

A major insight of economics:

International trade is determined by comparative advantage.  
(So is within country trade)

# Absolute advantage

Suppose there are 2 good (A, C) and 2 countries (N, S).

Unit production costs are  $C_{i,c}$  (e.g.  $C_{A,N}$ )

## Definition

N has an absolute advantage in A, if it has lower unit costs:

$$C_{A,N} < C_{A,S}.$$

Because rich countries have higher productivity in most industries, they have an absolute advantage in most goods.

This is where the concern about competitiveness comes from.



# Comparative advantage

## Definition

N has a comparative advantage in A, if it has lower relative unit costs:

$$\frac{C_{A,N}}{C_{C,N}} < \frac{C_{A,S}}{C_{C,S}} \quad (1)$$

The basic idea: Should Tiger Woods cut his own grass, do his taxes, ...?

## Trade with production – Example

- ▶ 2 countries
- ▶ 2 goods
- ▶ Households spend half of their incomes on each good.
- ▶ North is more productive in all goods (**absolute advantage**).
- ▶ The point: there are still gains from trade for both countries.

## Trade with production

	North	South
Labor force	100	400
Productivity: apples / worker	160	100
Productivity: computers / worker	16	2

Absolute advantage: labor productivity is higher in the North for all goods.

# Popular concerns about trade

- ▶ South:

- ▶ can we compete with the productive North?
- ▶ We need protection.

- ▶ North:

- ▶ can we compete with the low wage South?
- ▶ It will drive down our wages.

# Autarky

- ▶ Notation:
  - ▶ price of apples = 1 (why can we do this?)
  - ▶ price of computers =  $p$ .
  - ▶ wage rate  $w$ .
- ▶ Demand functions: everyone spends half of their income of each good:

$$a = 0.5w$$

$$pc = 0.5w$$

- ▶ This is for analytical simplicity only.

## Autarky wages

- ▶ Workers are paid their marginal products in both sectors
- ▶ North:

$$\begin{aligned}w[apples] &= 160[apples] = 16[computers] \times p \\ p &= 10[apples/computer]\end{aligned}$$

- ▶ South:

$$\begin{aligned}w &= 100 = 2p \\ p &= 50\end{aligned}$$

## Employment and output

- ▶ The total value of computers must equal the value of apples
  - ▶ from the demand functions
  - ▶  $a = pc = 0.5w$
- ▶ The value of output equals factor costs
  - ▶ labor is the only input
  - ▶  $aL = wL_a = 0.5L = wL_c = pcL$
  - ▶  $L = L_a + L_c$
- ▶ Half of employment is in apples, half in computers

## Autarky summary

	North	South
Wage	160	100
Price of computers	10	50
Consumption: apples	80	50
Consumption: computers	8	1
Fraction working in apple sector	50%	50%
Fraction working in computer sector	50%	50%
Apple output	8,000	20,000
Computer output	800	400

Note: all prices are in apples (the numeraire)



# Comparative Advantage

- ▶ North has higher labor productivity in both goods – **absolute advantage**.
- ▶ **Comparative advantage** looks at relative labor productivities.
- ▶ South: Productivity apples / computers =  $100/2 = 50$
- ▶ North: Productivity apples / computers =  $160/16 = 10$ .
- ▶ South has comparative advantage in apples.

## Comparative Advantage – Intuition

Think again about Tiger Woods's lawn...

What is the opportunity cost of a computer in North / South?

# Free trade

- ▶ Let's open up trade between North and South.
- ▶ It looks like we need money.
- ▶ How else to calculate the all important **exchange rate**?

# Free trade

- ▶ Who produces what?
- ▶ With free trade, each good costs the same in both countries.
  - ▶ Law of one price
- ▶ Normalize the price of apples to 1 again.
- ▶ It costs 10 to produce computers in the North, but 50 in the South.
- ▶ The price of computers must be between 10 and 50.

# Free trade

Let's try to find an equilibrium with  $10 < p < 50$  (strict inequalities)

The **South**:

- ▶ wage rate  $w_S$  – to be determined
- ▶ price of apples = MC:  $1 = w_S/100$
- ▶ that pins down  $w_S = 100$
- ▶ price of home grown computers = MC:  $w_S/2 = 50 > p$
- ▶ South cannot produce computers - it specializes in **apples**.

# Free trade

## The North:

- ▶ must produce computers at price  $p = w_N/16$ .
- ▶ with  $10 < p < 50$ , that bounds  $160 < w_N < 800$ .
- ▶ With the right  $w_N$  the North could produce both goods and break even
- ▶ The example is rigged so that both markets clear when the North specializes in computers.

In general, one country would produce both goods and the other would produce the good with comparative advantage.

# Free trade

Let's compute prices and quantities produced.

**South:**

- ▶ employment in apples: 400
- ▶ apple production = income:  $100L_a = 40,000$
- ▶ wage = MP in apple sector:  $w_S = 100$
- ▶ consumption of apples: 20,000 (half of income)
- ▶ consumption of computers:  $20,000/p$ .

# Free trade

## North:

- ▶ employment in computers: 100 (complete specialization)
- ▶ computer production:  $16L_c = 1600$
- ▶ income:  $1,600p$ .
- ▶ spending on apples:  $800p = 20,000$  (not eaten in South)
- ▶ this pins down  $p = 20,000/800 = 25$
- ▶ income:  $1,600p = 40,000$



## Free trade

	North	South
Wage	400	100
Price of computers	25	25
Consumption: apples	200	50
Consumption: computers	8	2
Fraction working in apple sector	0%	100%
Fraction working in computer sector	100%	0%
Apple output	0	40,000
Computer output	1,600	0

# Free trade

- ▶ Consumption of both goods rises in both countries (weakly).
- ▶ Welfare definitely improves.
- ▶ Real wages rise in both countries.
  - ▶ South:  $w = 1$  (apple), but  $w$  rises in terms of computers
  - ▶ North:  $w = 16p$  (computers), but  $w$  rises in terms of apples.

## Productivity Growth in the South

	North	South
Labor force	100	400
Productivity: apples / worker	160	200
Productivity: computers / worker	16	4

We double productivity in the South.

## Productivity Growth in the South

Try an equilibrium where the North specializes in computers and the South in apples.

South:

North:

In both countries:  $C_a = 40,000$  and  $C_c = 800$ .

Welfare gains.

# Lessons

- ▶ Trade improves welfare:
  - ▶ allowing a country to borrow and save
  - ▶ allowing a country to specialize in highly productive goods
- ▶ The more different the countries, the more beneficial trade is.

# Lessons

- ▶ Both rich and poor countries benefit from trade.
  - ▶ Your wages are not set in China.
  - ▶ They are the marginal product of U.S. labor.
- ▶ Competitiveness is not an issue.
- ▶ One way of thinking about trade: a production technology.
  - ▶ make (U.S.) corn into (Japanese) cars.

## Opposition to Trade

# Why so much opposition to free trade?

If trade is so great, why is it not popular?



# Could trade lower a country's GDP?

One idea: **strategic sectors**

Imagine a world with 2 goods: apples and computers

- ▶ Apples are boring: grow trees and pick apples
- ▶ There is innovation in computers
- ▶ Innovators earn monopoly rents

If a country can specialize in computers, its GDP (growth) can rise

Key: **temporary** trade restrictions can **permanently** rearrange comparative advantage

Main motivation of industrial policies

# Reading

Blanchard / Johnson, Macroeconomics, 6th ed., ch. 19-6

Additional reading:

- ▶ Jones, Macroeconomics, ch. 14.