

# The Trade Deficit and Foreign Debt

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- Why do countries trade?
- Is trade beneficial?
- Why does the U.S. run a large trade deficit?
  - What could be done about it?

# Trade is controversial

What are potentially harmful effects of international trade?

## Does trade reduce 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*

## Does trade costs 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. . . .

When the lending stops, . . . the jobs associated with those exports stop.”

– Lester Thurow

- How can we compete with low wage countries?
- What could we do to compete?
- What happens if our wages are too high?

*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

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

What Does International Trade Do?

- Strangely, trade within countries is not controversial.
  - What is the trade surplus of North Carolina?
- Why is trade within a country beneficial?
  - Think about the alternative...
- Is there any difference between inter-state and inter-country trade?

## ① Trade across time:

- when a country wants to save, it buys foreign assets
- it pays for the assets by selling goods - a **trade surplus**.

## ② Specialization:

- trade allows countries to specialize in products it can make efficiently.

- What is the role of trade deficits and surpluses?
- A trade surplus means the country **saves** for future consumption.
- A deficit means a country **borrow**s against future income.
- Exactly analogous to borrowing and saving by individuals.

- $Y = C + I + G + NX$  is the country's budget constraint.
- Income:  $Y$
- Spending:  $C + I + G$
- Borrowing = Spending - Income
- $-NX = C + I + G - Y$

## Example: Trade across time

### Assumptions:

- 2 countries
- 1 good, perishable
- Oddtopia has a good harvest in odd periods, Eventopia in even periods
- Households like smooth consumption

# Example: Trade across time

Year	1	2	3	4	5	6
			<i>Wheat harvest</i>			
Oddtopia	100	0	100	0	100	0
Eventopia	0	100	0	100	0	100
			<i>Trade balance</i>			
Oddtopia	+50	-50	+50	-50	+50	-50
Eventopia	-50	+50	-50	+50	-50	+50
			<i>Consumption</i>			
Oddtopia	50	50	50	50	50	50
Eventopia	50	50	50	50	50	50

The table shows the amount of wheat harvested every year in Oddtopia and Eventopia.

- Consider the stochastic version of the previous example.
- In each year, one country has a good harvest.
- The probability of a good harvest in each country is  $1/2$ .
- By trading bonds against goods, countries can achieve perfect consumption smoothing.

# Country budget constraints

- Consider the identity:

$$Y - (C + I + G) = EX - IM \quad (1)$$

- When the country produces more than it eats,  $EX - IM > 0$ .
- In return for selling goods, the country must acquire foreign assets.
- $EX - IM$  is saving by the country.
- Exactly like the budget constraints for individuals and governments.

# Comparative Advantage

# Comparative Advantage

A major insight of economics:

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

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.

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

$$a = 0.5w$$

$$pc = 0.5w$$

# Autarky wages

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

$$w = 160 = 16p$$

$$p = 10$$

- South:

$$w = 100 = 2p$$

$$p = 50$$

# Employment and output

- The total value of computers must equal the value of apples
  - from the demand functions
  - $a = pc$
- The value of output equals factor costs
  - labor is the only input
  - $wL_a = wL_c$
- 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...

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

- 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.

- Let's try to find an equilibrium with  $10 < p < 50$  (strict inequalities)
- The **South** cannot produce computers - it specializes in **apples**.
  - sold at price  $1 = w_S/100$ .
  - that pins down  $w_S = 100$ .
- **North**:
  - must produce computers at price  $p = w_N/16$ .
  - 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.

Let's compute prices and quantities produced.

## South:

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

## North:

- employment in computers: 100
- computer production: 1,600
- income:  $1,600p$ .
- spending on apples:  $800p = 20,000$
- 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

- 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.
- **Exercise:** show that productivity gains in the South benefit both countries.

- 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.

- 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.

What about outsourcing?

# Why so much opposition to free trade?

- Trade debates are usually about redistribution, not about efficiency
  - Workers in import competing industries lose their jobs (U.S. cars, European agriculture).
  - Capital becomes obsolete
- Loss of high value added jobs
  - “Our standard of living can only rise if capital and labor increasingly flow to industries with high value-added per worker.” – Magaziner and Reich
- Trade policy as a lever for human rights or environmental concerns
  - E.g.: WTO/Seattle. MFN for China.

- An alternative to trade: move the factors of production
- In the example: free labor migration leads all workers to move North.
- The economy looks like the North under autarky with more people.
- This has no effect on Northern workers.
- It raises welfare of the migrants to Northern standards.
- Total world output rises (because the North has absolute advantage in all goods).

## The Trade Deficit and Foreign Debt

# The Trade Deficit and Foreign Debt

- Why do countries run trade deficits?
- What could / should be done about them?
- How large a deficit can be sustained?

- Recall the NIPA identity:  $Y = C + I + G + EX - IM$ 
  - Why is this true?
  - What about unsold goods?
- Rearrange as

$$\underbrace{Y - T - C}_{\text{private saving}} + \underbrace{T - G}_{\text{public saving}} + \underbrace{IM - EX}_{\text{foreign saving}} = I \quad (2)$$

- $T$ : tax revenues.

# Reasons for trade deficits

$$\underbrace{Y - T - C}_{\text{private saving}} + \underbrace{T - G}_{\text{public saving}} + \underbrace{IM - EX}_{\text{foreign saving}} = I \quad (3)$$

We get a trade deficit when we have:

- 1 High investment  $I$ .
- 2 Low private saving
- 3 Large government deficits

# The trade deficit and foreign debt

- Countries have trade deficits when domestic saving is not enough to finance investment:

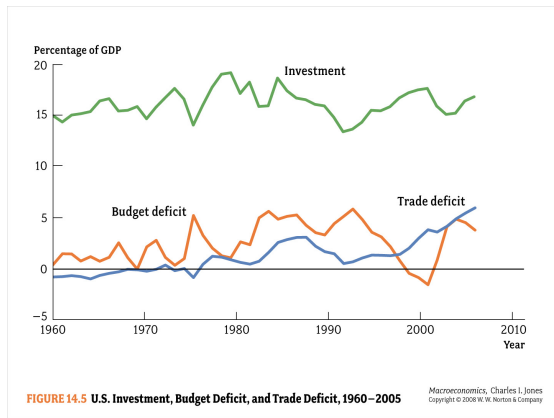
$$EX - IM = NX = S - I \quad (4)$$

- The flip side of a trade-deficit is foreign investment at home.

## Fact

*Politicians often want trade surpluses and foreign investment. This is not possible.*

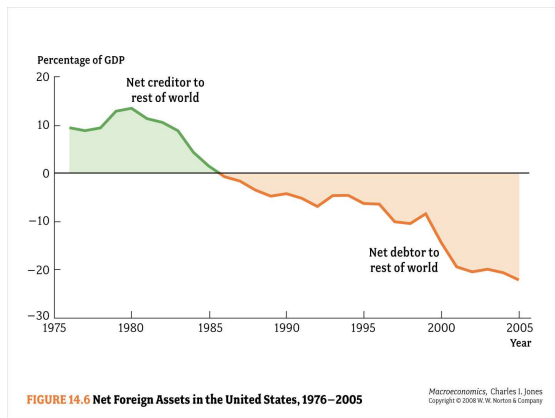
# The U.S. trade deficit



*I* has been roughly constant.

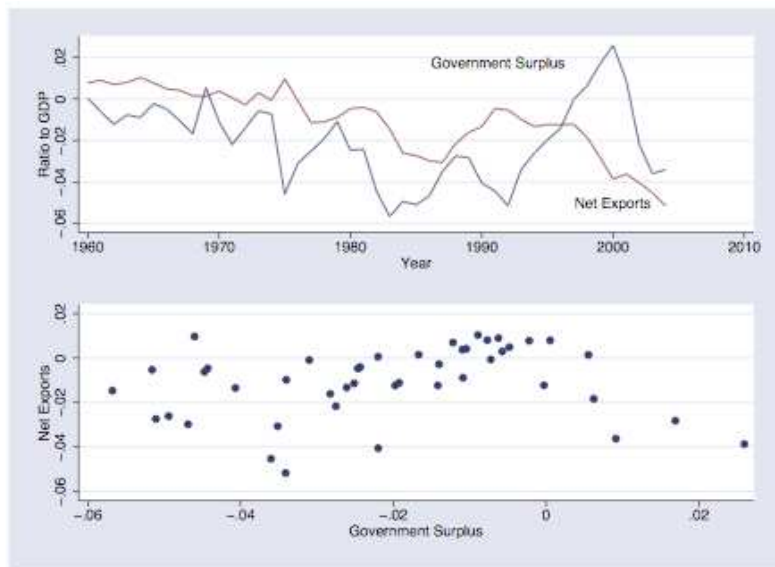
The trade deficit has been rising → saving must have declined.

# Net foreign assets



Whenever the trade balance is in deficit, foreigners invest in the U.S.  
The U.S. sells off assets.

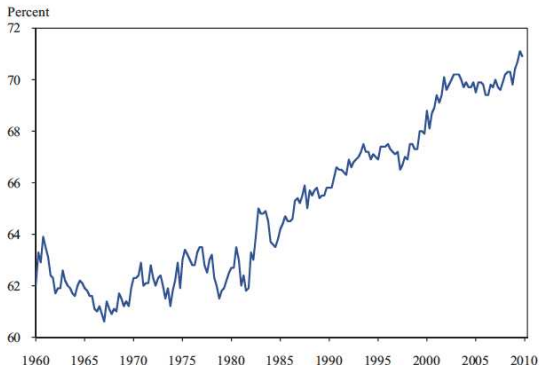
# It wasn't the government budget



Source: Backus et al. 2009

# The Decline of U.S. Saving

Figure 4-1  
Personal Consumption Expenditures as a Share of GDP

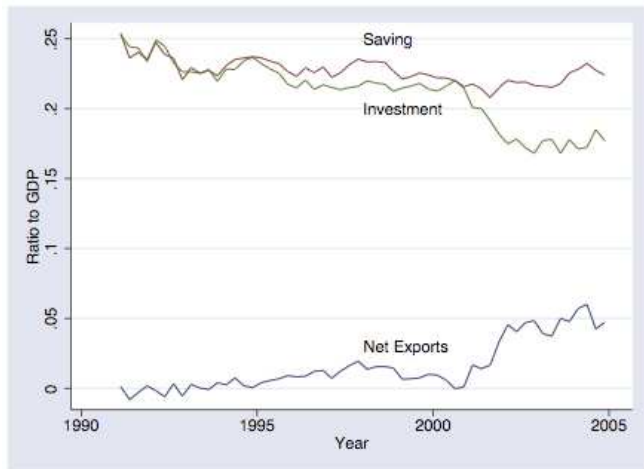


Source: Department of Commerce (Bureau of Economic Analysis), National Income and Product Accounts Table 1.1.10.

Source: ERP 2010

Consumption / GDP is rising - why? We'll come back to that...

## Low Investment in Other Countries



Source: Backus et al. 2009

One reason for our deficit: surpluses in other rich countries.  
Why? - They don't grow / invest.

- Since 2000: Deficits are financed largely by selling treasury bonds to foreign governments (Feldstein 2008).
- The likely motivation: sustain their own trade surpluses.

# How could the trade deficit be reduced?

$$\underbrace{Y - T - C}_{\text{private saving}} + \underbrace{T - G}_{\text{public saving}} + \underbrace{IM - EX}_{\text{foreign saving}} = I \quad (5)$$

Anything that improves the TB must do one of the following:

- 1 Increase private saving.
- 2 Reduce the government budget deficit.
- 3 Reduce investment.

*This is a key point – whenever you hear a story about the trade deficit, check that  $S^P, S^G, I$  are affected in the right way.*

# Popular causes of the trade deficit

- Sluggish economic growth
- Too high cost of production
- Low wages in competitor countries
- Foreign trade restrictions or dumping
- “Overvalued” exchange rate

How do these relate to  $NX = S - I$ ?

# Consequences of the trade deficit

Lower 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*

Does competition with LDCs force us to lower wages?

Would lower wages help the deficit?

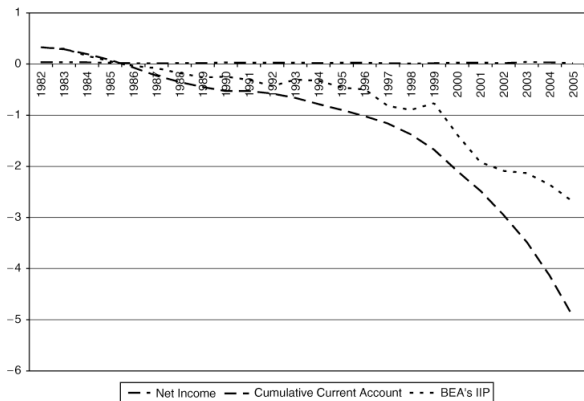
What does it mean for a country not to be “competitive”?

*“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. . . . When the lending stops, . . . the jobs associated with those exports stop.” – Lester Thurow*

# Can the U.S. run trade deficits forever?

Do we have to repay our debt eventually?

# U.S. Interest Payments



Source: Hausman & Sturzenegger (2006)

## A strange fact

Even though our net asset position deteriorates, we pay no (net) interest.

# U.S. Interest Payments

- If we continue to borrow, why don't we pay interest to the rest of the world?
- In 2005, the U.S. had \$5 trillion in net debt and **earned** about \$17 billion in net income.
- One reason: capital gains.
  - BEA estimates about \$2.3 trillion in capital gains (1982-2005)
  - This reduces the net debt from \$5 trillion to \$2.7 trillion.
- Second reason: U.S. assets earn a higher return than do foreign assets in the U.S.
  - Foreign direct investment is probably underestimated.
  - U.S. assets are safer / more liquid.

# Trade Deficits May Be Smaller

- We worry about trade deficits because of the interest payments they imply.
- As long as the U.S. enjoys a rate of return advantage, it can borrow from abroad without paying interest.
- The “true” deficit may be much smaller than official numbers suggest.
- In fact: the U.S. may run a “true surplus:” it acquires assets that pay more than the assets it sells.

# How worrisome is the trade deficit?

- There is no definite upper bound to foreign debt.
- A country can keep borrowing as long as lenders can be convinced to lend.
- But note: countries do not borrow – individuals do.
  - The country's trade deficit is simply the sum of individual borrowing.
  - Why should we worry about that?
- What is the trade balance of North Carolina?

- Jones, Macroeconomics, ch. 14.
- Economic Report of the President 2010, ch. 4.

- Backus, David (et al.) 2009. "Current Account Fact and Fiction." NBER working paper #15525. <http://www.nber.org/papers/w15525>.
- Feldstein, Martin. 2008. "Resolving the Global Imbalance: The Dollar and the U.S. Saving Rate." *Journal of Economic Perspectives*, 22(3): 113–25.
- Hausmann, R. and Sturzenegger, F. (2006). "Why the US Current Account Deficit is Sustainable." *International Finance* 9 223-240. DOI: 10.1111/j.1468-2362.2006.00185.x