

Lecture 7(iii)

Announcements

None

Lecture

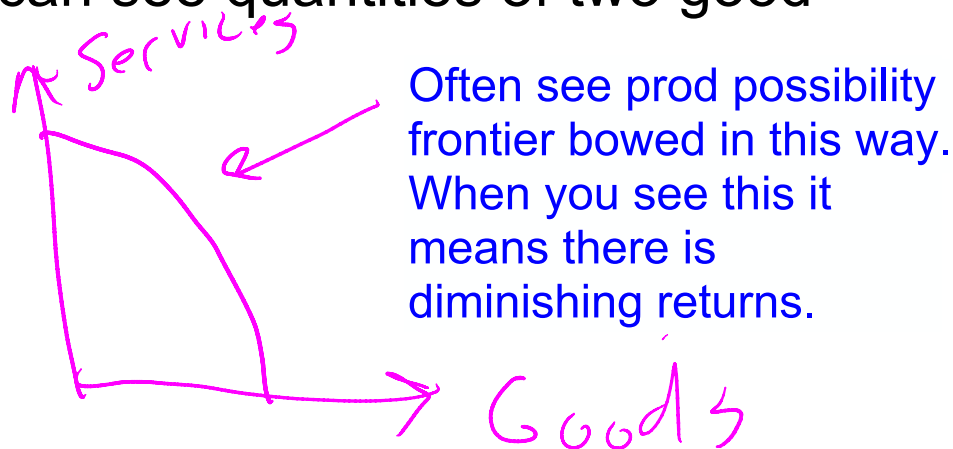
1 Review Trade Based on comparative advantage.  
(Robinson/Friday Trade)

2. Trade based on increasing returns.  
(Robinson 1/Robinson 2 Trade)

3. The iPhone and the international division of labor.

4. Free Trade Area in North America  
NAFTA before, now probably  
USMCA. Contrast with EU

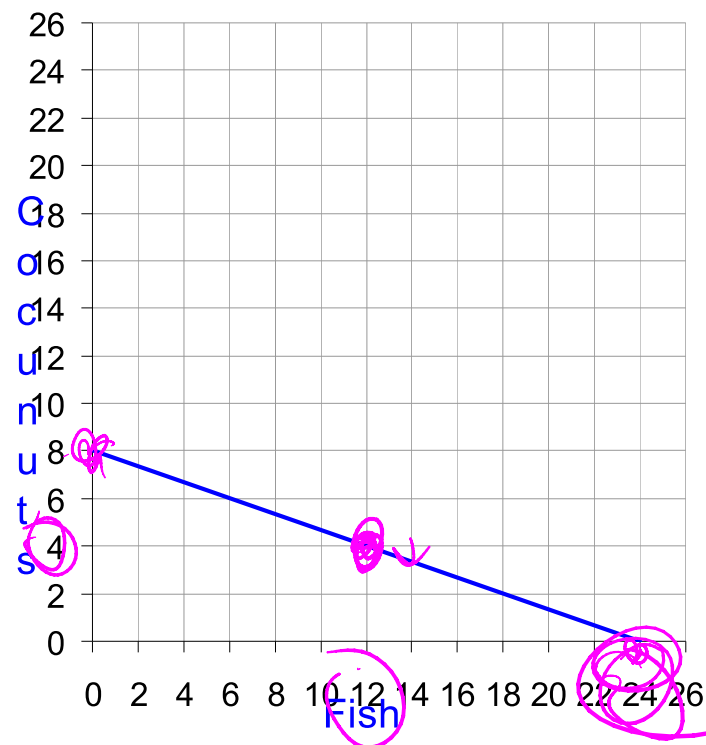
Now turn to our new graph when can see quantities of two good



Remember Robinson Crusoe from last class: No diminishing returns so get a straight line.

Has 8 hours a day.  
Can produce 3 fish in an hour or 1 coconut.

## Production Possibility Frontier for Robinson Crusoe



Slope:  $= 1/3$   
Opportunity Cost of one more fish  
(in terms of coconuts)

Suppose **autarky** (no trade, on his own).

We will talk about choice next week. But let's say he decides to work half on each.

Production point and consumption point

produce, consume **12 fish**

produce, consume **4 coconuts**

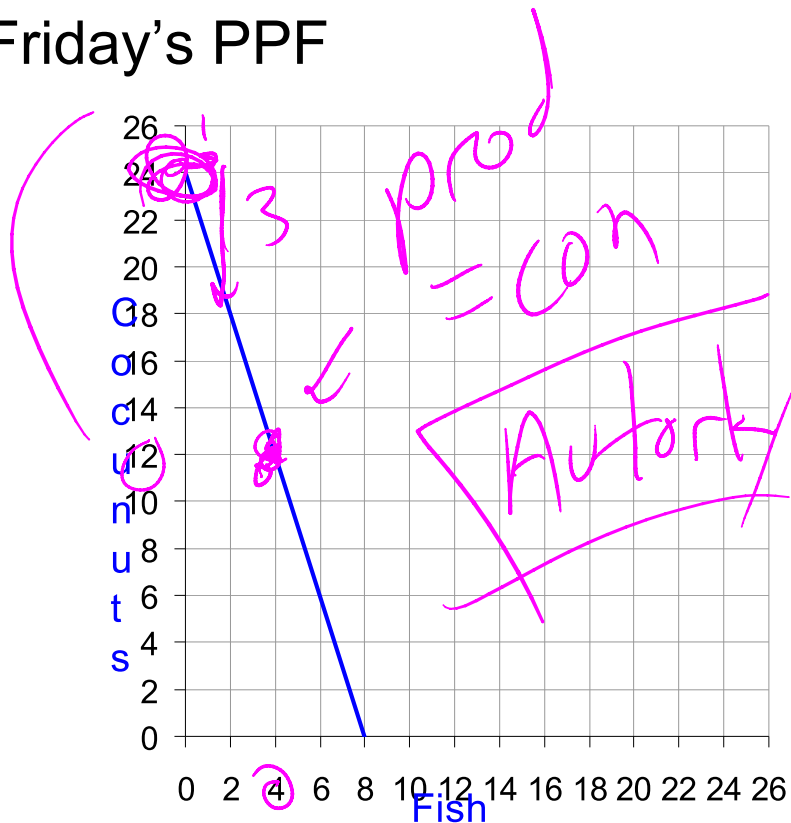
Suppose another person named **Friday** lives on a neighboring island

Friday works only 2 hours a day. In one hour, can collect **12 coconuts** or **4 fish**.

Remember: Crusoe can catch 3 fish or pick one coconut in an hour.

So Friday has an **absolute** advantage at both jobs compared to Robinson Crusoe in terms of productivity per hour.

## Friday's PPF



Slope = 3. Opportunity cost of fish in terms of coconuts

Opportunity cost of fish:

for Robinson:  $\frac{1}{3}$  coconuts  
for Friday: 3

Robinson has a lower opportunity cost.

Robinson has a **comparative advantage** in fish.

Friday has a **comparative advantage** in coconuts.

Suppose can go to the market and trade. Suppose market price is one coconut for one fish. What do these guys do? **Specialize according to comparative advantage.**

Example how both can be better off

Robinson Produces  
24 fish 0 coconuts

Friday Produces  
0 fish 24 coconuts

Robinson gives Friday 12 fish

Friday gives Robinson  
12 coconuts

Robinson consumes

: 12 fish 12 coconuts

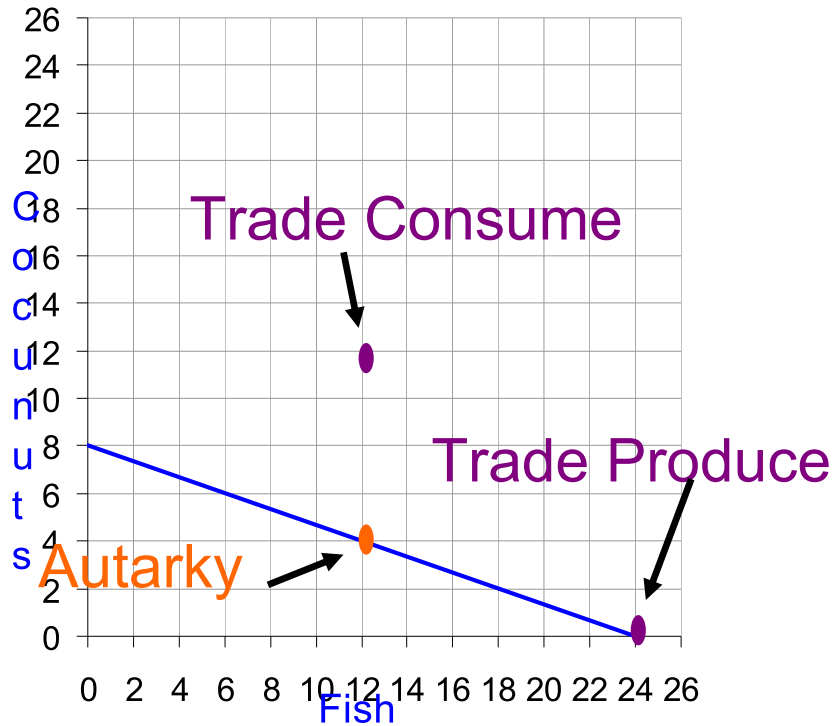
Friday consumes

: 12 fish 12 coconuts

Pareto improvement compared to autarky!

Let's see the a famous picture

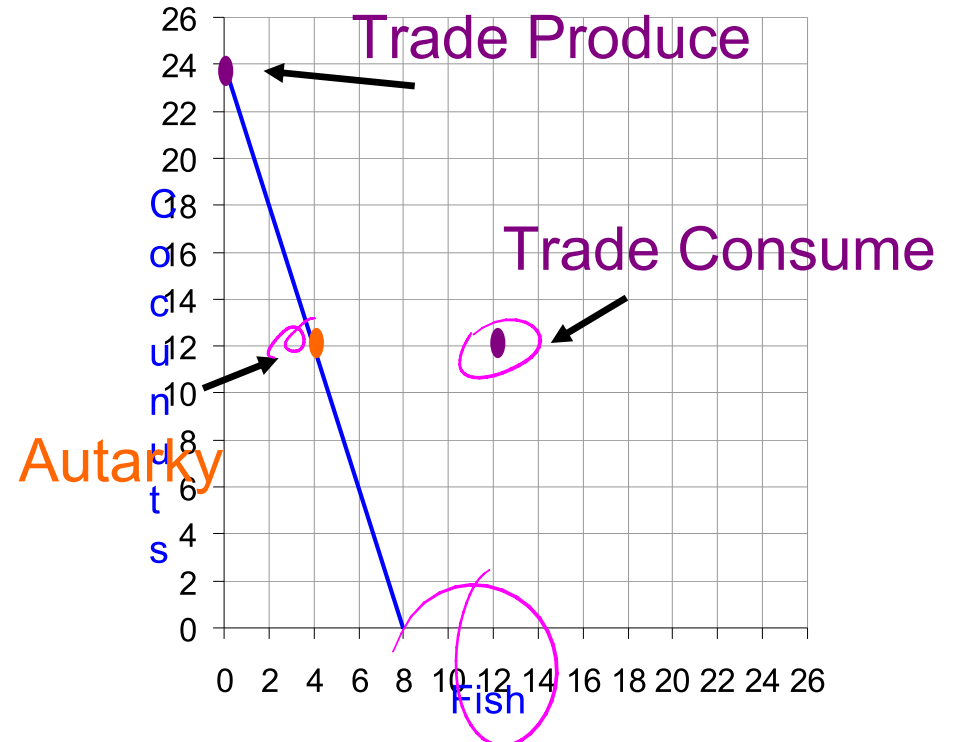
## Comparative Advantage Robinson PPF



Op. Cost 1 Fish = 1/3 Coconuts

	Produce	Consume
Autarky	12 F, 4 C	12F, 4 C
Trade	24F, 0 C	12F, 12 C

## as a Basis for Trade Friday PPF



Op. Cost 1 Fish = 3 Coconuts

	Produce	Consume
Autarky	4 F, 12C	4 F, 12 C
Trade	0 F, 24 C	12F, 12C

## Robinson/Friday Trade: Trade Based on Comparative Advantage

David Ricardo: 1772-1823



Low skill country: specialize in labor intensive, assemble sneakers

High skill, high capital country: do design, marketing, engineering

Ricardo challenged the ideas of mercantilism (16<sup>th</sup>- 18<sup>th</sup> centuries) which were:

- Discourage imports (high tariffs), especially of manufactured goods. (importing raw materials OK)
- Encourage exports (export subsidies), (exporting raw materials not OK, make something out of them first.)
- Hoard gold.

Ricardo argued instead that imports can benefit a country, by allowing it to specialize according to its comparative advantage.

(By the way, China has found the mercantilist playbook!)

## Comparative Advantage Trade Actual Economy

Warm Climate

Temperate

Climate



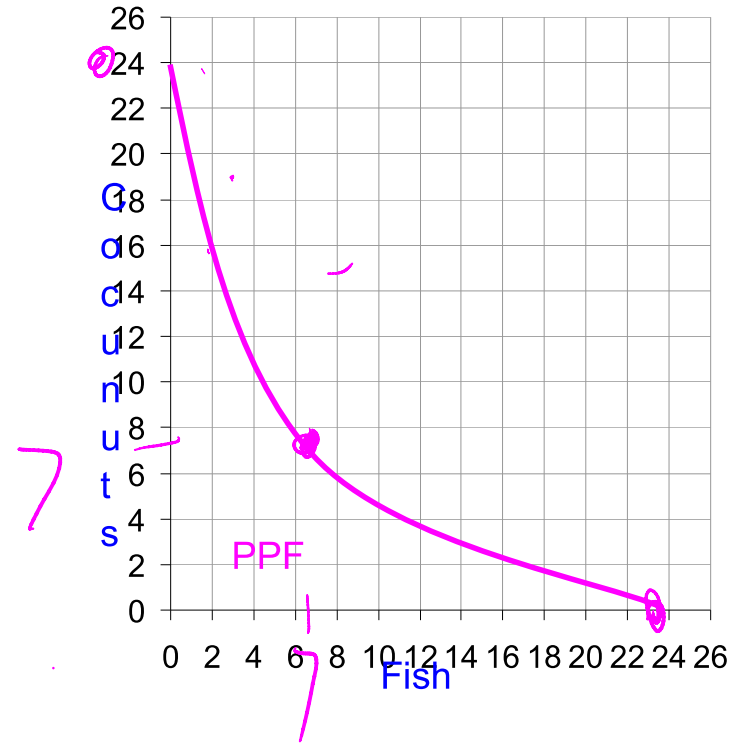
Low Skill

High Skill



## 2. Increasing Returns and Gains from Trade

Suppose ppf looks like:



Opportunity cost one more fish falls as fish production increases  
(One reason: learning by doing)



Can specialize and make:

24 fish, 0 coconuts

or

0 fish 24 coconuts

Or try to do both and make

7 fish and 7 coconuts

“Jack of all trades but master of none”

With autarky might still might do both even if not particularly good at either task without specialization.

Robinson in autarky

Perhaps produce and consume 7 coconuts and 7 fish.

Now suppose Robinson can trade with clones of himself? What do we expect to happen?

**Specialization!**

Robinson 1:

Produces 24 Fish 0 Coconuts

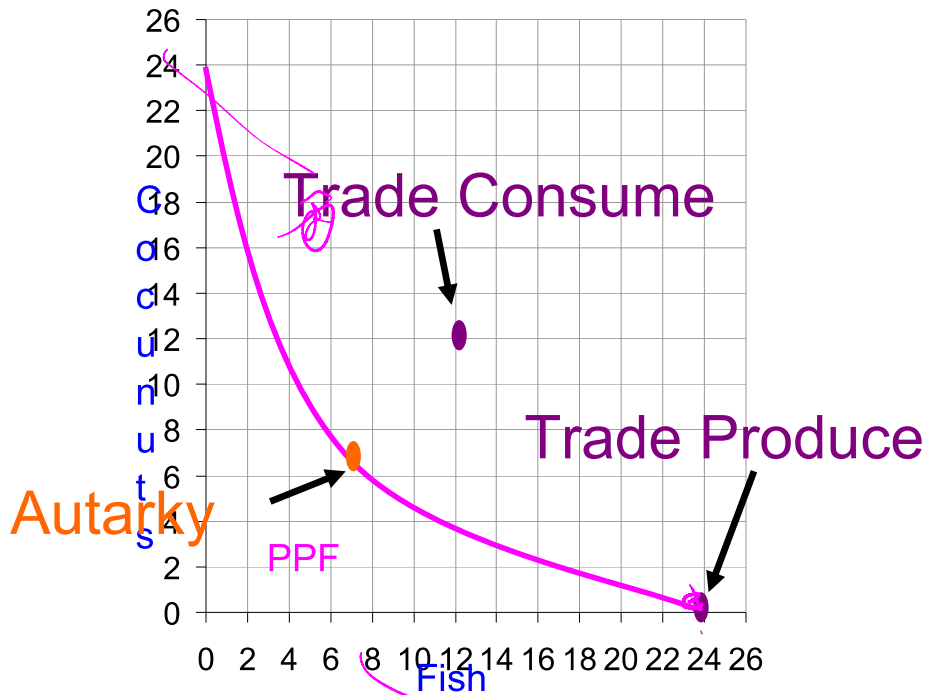
Robinson Clone:

Produces 0 Fish 24 Coconuts

Each consumer

12 Fish 12 Coconuts

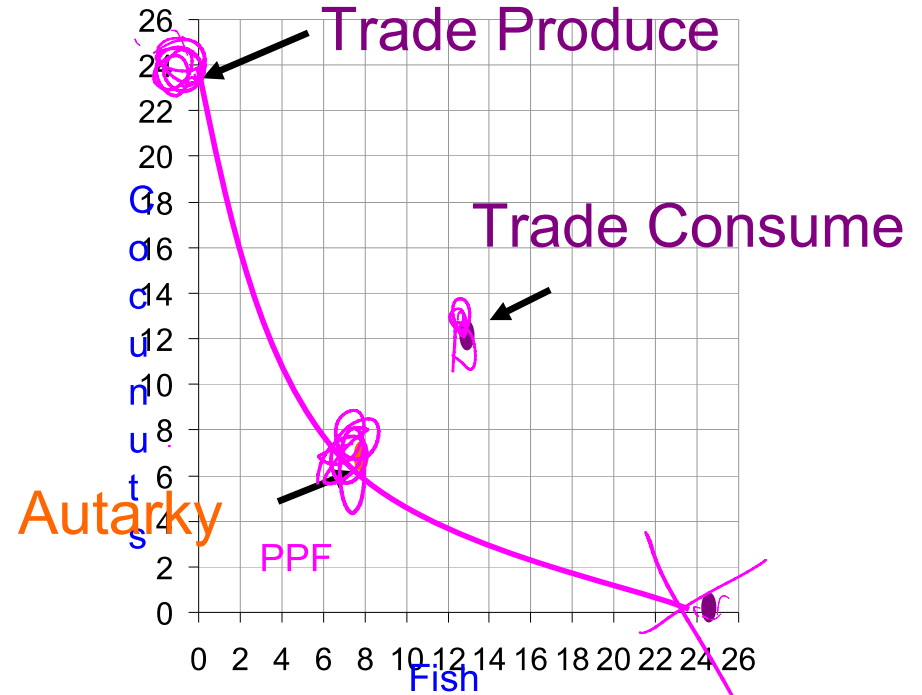
## Increasing Returns Robinson 1 PPF



	Produce	Consume
Autarky	7 F, 7 C	7F, 7 C
Trade	24F, 0 C	12F, 12 C

## as a Basis for Trade

## Robinson 2 (clone) PPF



	Produce	Consume
Autarky	7 F, 7C	7 F, 7 C
Trade	0 F, 24 C	12F, 12C

# Robinson 1/Robinson 2 Trade Trade Based on Increasing Returns

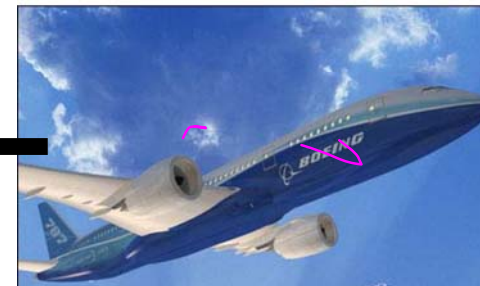
We can enjoy increasing returns and more product variety.

Paul Krugman    Adam Smith



# Trade Based on Increasing Returns

Actual Economy  
*Europe* Rich Country 1      *US* Rich Country 2



## Trade Based on Increasing Returns

Interest in the theory driven by the empirical observation that much trade is between similar countries

U.S. and Canada,  
U.S. and Europe  
U.S. and Japan  
all high skill countries.

With increasing returns, through trade possible for:

- (1) have large production volumes of any given product
- (2) consumers have a large variety

Suppose Minnesota were a country

Suppose autarky. (No trade with other states or countries)

Vehicles: Polaris



Slingshot

Movies:



Music:



Other Stuff



With trade, we can enjoy more variety than this

International Division of Labor and the iPhone



iPhone 8 256GB

Price \$949.00 "contract free"  
(from "T-mobile" at Apple Web site)

## Teardown of iPhone



<http://recode.net/2014/09/23/teardown-shows-apples-iphone-6-cost-at-least-200-to-build/>

### Components (maybe \$200?)

(Robinson 1/Robinson 2 Trade )

- All made in advanced economies.
  - Toshiba (**Japan**) making memory
  - TSMC (**Taiwan**) and Samsung (**Korea**) processor (designed by Apple)
  - Infineon (**Germany**) baseband
  - Broadcom (**U.S**) bluetooth
  - Corning (**U.S**) Gorilla glass
- These nations are similar (U.S. = Robinson 1, Japan=Robinson 2) in having
  - **high skill labor** used to develop these top-of-the-line technologies.
  - **capital intensive** production processes that use hardly any labor.
- Huge scale economies at work here, in R&D and development of production processes.

**Assembly in China** (maybe \$10-\$15)  
(Robinson /Friday Trade)

I've seen an estimate of \$6.50, but this strikes me as low, may not include manufacture of the very nice box, etc. All components go to the massive Foxconn complex (300,000 workers!) for assembly. Assembly is **labor intensive**.



Specialization according to comparative advantage. Low skill workers earning about \$170 a month.

### **Customer Service** **(Robinson /Friday Trade)**

Consumers need to call someone to get phone hooked up and resolve glitches. This

is labor intensive, so goes where labor is cheap and the population can speak English. **Philippines**, where pay is  $\leq$ \$500 a month. **Apple**. (**U.S**) Estimated to keep more than half of the \$650! Employs high skill workers. The \$300 plus is a return on innovation, investment in apple stores, etc.

Like the Apple Store in New York



... and Shanghai



~~North American Free Trade Agreement~~  
might get new name  
USMCA

What is it about?

US/Mexico Part: mainly Robinson/Friday  
trade (trade based on comparative  
advantage)

US Canada Part: mainly  
Robinson1/Robinson2 trade  
(trade based on scale economies)

~~Other effects including political ones. (US  
Canada military allies. political)~~

~~Brexit~~



NAFTA free movement of goods across 3 countries.

United States: free movement of trade of goods and people across states.

European Union: free movement of goods and people across countries.  
(another plus factor is political: Made it less likely for Germany to get in wars with France and England).

Brexit: United Kingdom getting out. UK trying to get the free movement of goods part only. Let's see what happens in March.

[Talk about this next week.](#)

