China US Trade and Theory of Public Goods

Econ 1101

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Announcements

Start working on "Consumer theory" worksheet (at week 9 on Moodle), will go over this in recitation next week.

ECON 1101 Lecture 8.1

1. China and US trade

2. Theory of Public Goods

ECON 1101 Lecture 7.1

1. China and US trade:

- Review trade theories
- Review of division of labor application
- How to explain China and US trade

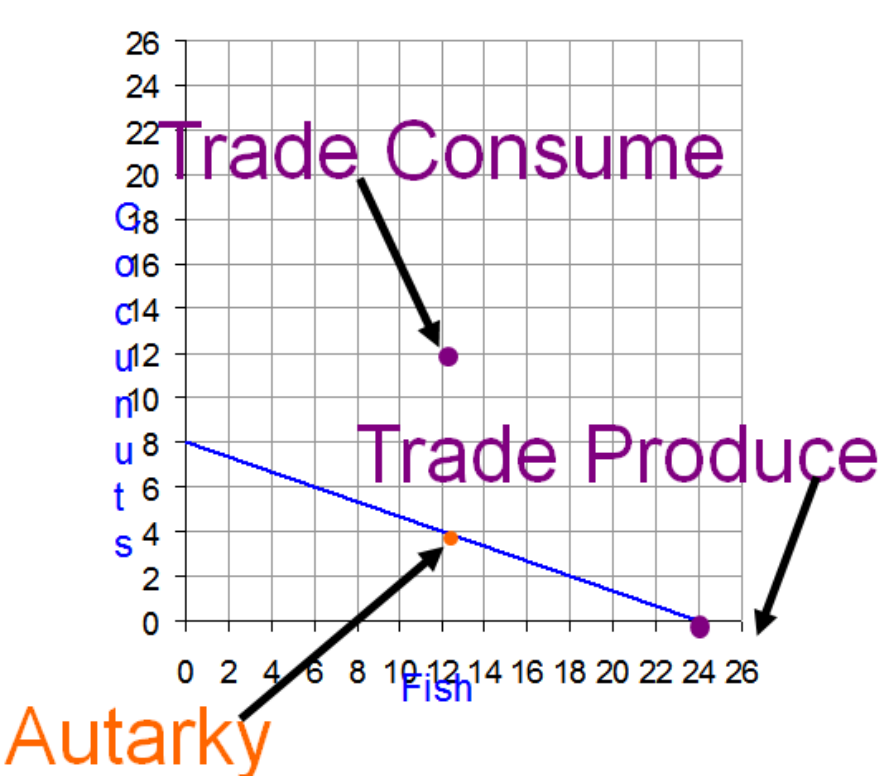
Review: Theories of Trade

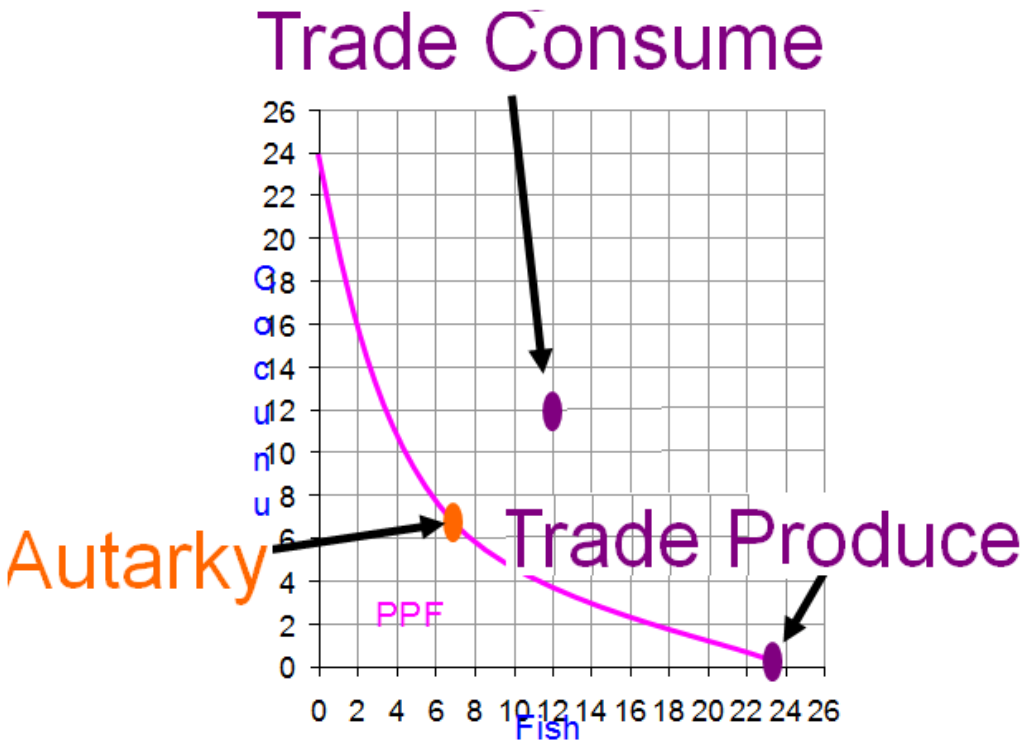
Last class we talked about:

1. EconLand Model of trade:
   - trade because domestic price of different than world price
   - there are winners and losers but over all welfare increases
2. Ricardian Model of trade:
   - trade because of comparative advantage
   - countries with different technologies will specialize and trade
   - everyone is better off from trade (both Robinson and Friday consuming more than in autarky, total world production increases)
3. IRS model of trade:
   - trade to take advantage of increase in productivity from specialization
   - countries with similar technologies specialize in some goods and trade
   - everyone is better off (R1&R2 consume more, world production $\uparrow$)

Recap: Theories of Trade

Everyone is better off - Ricardian Trade and IRS





International division of labor (I phone)

Application: use the IRS and Ricardian (comparative advantage) models of trade to explain some patterns of production we see in a given product

Different components of the I phone:

- Capital intensive components:
  - production specialized in different developing countries (Kor, Jap, US)
  - why in different countries? $\Rightarrow$ **IRS**
- Labor intensive components:
  - production is specialized in developing countries (China, Brazil)
- Why labor intensive in developing and capital intensive in developed?
  - $\Rightarrow$ **Ricardian model**
  - (low skilled) labor cheaper in developing countries: comp. advantage

Second Application: China and US trade

We will use what we have learned so far to possibly explain trade patterns between China and US

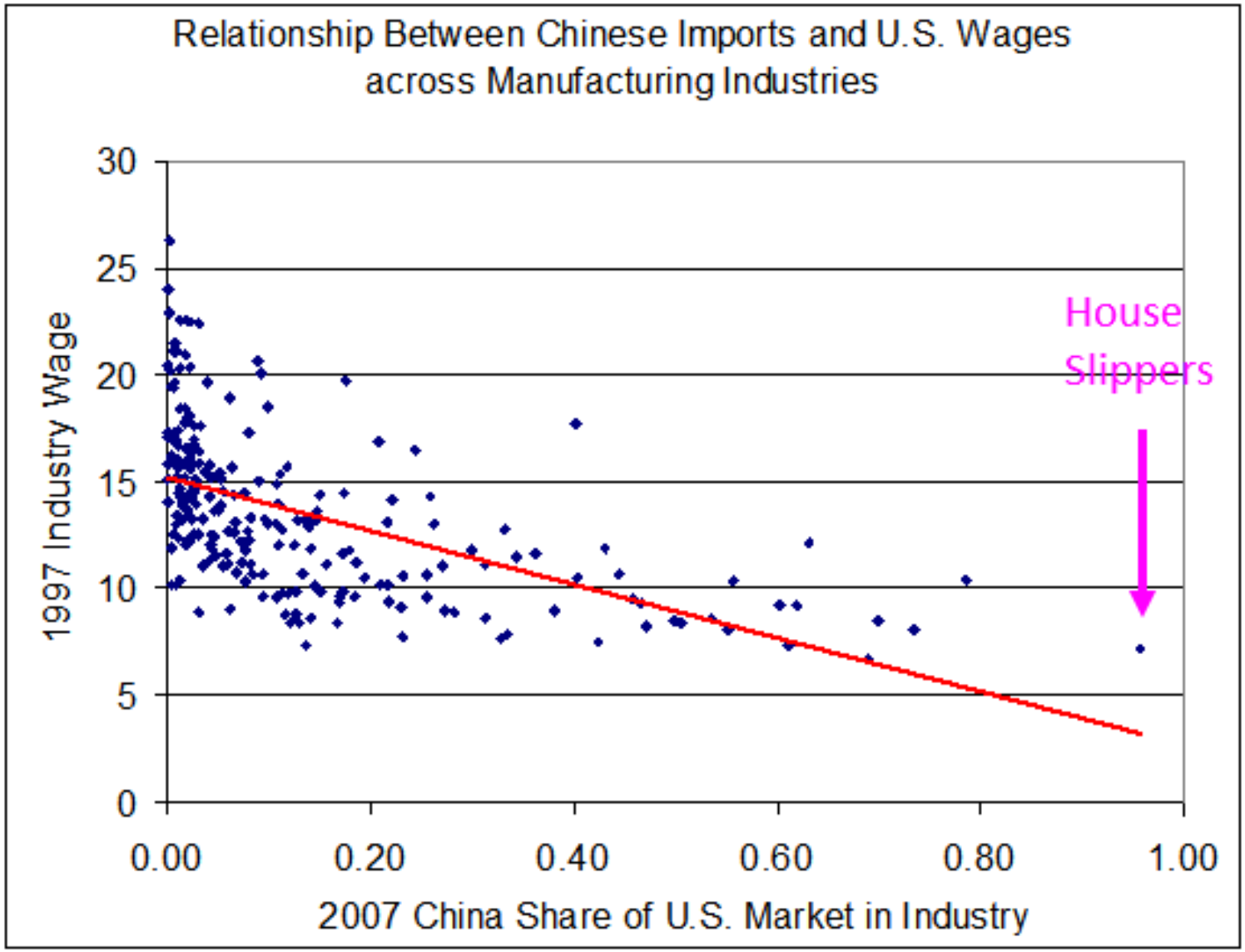
1. From I-phone analysis: countries with low wages CA on low-skill labor
   - China has low wages - Ricardian theory would predict specialization on low-skilled labor products
   - We will see if this is the case (data)
2. US imports a huge amount of goods from china (trade imbalances)
   - Ricardian model: CA in consumption
   - Currency manipulator argument
   - Savings and over consumption
3. Other factors that might account for this imbalance:
   - Intellectual property protection
   - Policy: production subsidies

China and US trade

IRS vs Ricardian model of trade: US and China are not that similar, can use Ricardian model to explain trade patterns

- China has a CA in industries that use a lot of low-skilled labor
- US has a CA in industries that use a lot of high skilled labor
- Thus according to the Ricardian model China should specialize in low skilled labor products
- Lets see data from you homework this week...

Imports from china and wages



Imports from china and wages

Observations:

1. In general low skill industries in the US tend to pay the lower wages, thus the lower the wage, the less skilled the labor.
2. China's market share is the % of products that we consume from china (example % of pencils that are imported)

From graph:

- China's market share increases the lower is the wage
- Evidence: china specialize in low skilled labor as expected
- Example the household slipper industry (pink) has been virtually wiped out by Chinese

Trade based on CA (based on labor skill)

中国
China

美国 U.S.

UNIVERSITY OF MINNESOTA
Driven to Discover℠

assembly of iPad

R&D for iPad

China and US Trade

- Manufacturing jobs that involve labor-intensive, repetitive tasks in the manufacturing of standardized good have been wiped out in the U.S.
    - The textile and furniture industries, that had earlier located in places like North Carolina for low wages, have been decimated.
- One take on U.S-China trade is that it is simply mutually beneficial Robinson-Friday trade, based on comparative advantage
- There may be more to it than that, and we will look at three issues (trade imbalance US imports a lot from China)

Issue 1: Financial Side of Trade

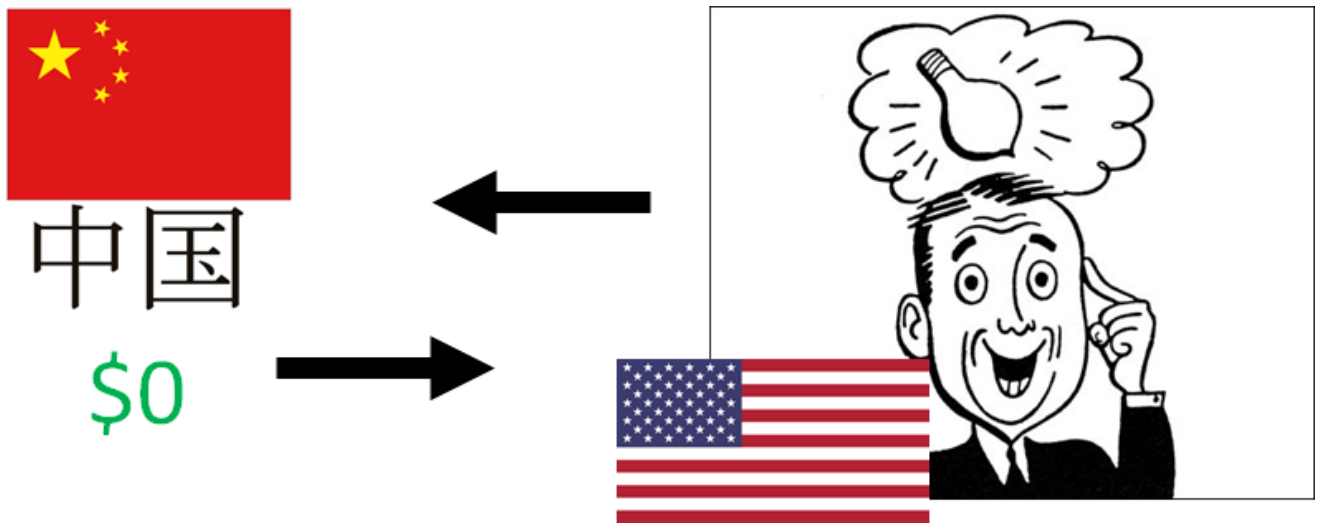
Trade is not just in goods (as it was in our simple island-economies), the US is borrowing to pay for all our consumption

1. US is paying for imports by going into debt:
   - This is Robinson does nothing, Friday picks coconuts and fish in exchange for one day getting paid back with interest.
   - This pattern suggests US has CA in consumption, China in production
2. The currency manipulator argument:
   - US blames China for manipulating the Remnibi to promote exports and discourage consumption (see the news accounts in reading 5)
     - lowed-valued Chinese currency encourages US to buy cheap Chinese imports and discourages Chinese to buy our expensive goods
   - US not an innocent bystander because other wealthy countries (like Germany) save a lot, so perhaps is the US's consumption problem

Issue 2: Intellectual property protection

Another source of the imbalance is violations of intellectual property rights the undercuts sales in china (value of exports is lower)

- Because of poor intellectual property protection its easy to make illegal copies of music, computer operating systems and undercut windows sales for example
- To actually get some people to pay rather than use illegal copies, Microsoft responded by setting very low prices in China, so despite huge sales the total value is low



Issue 2: Intellectual property protection

- In actuality, U.S. firms are making some money in China from intellectual property, but at a lower rate than we might expect, given the size of their economy
- Royalty and License Fee data for 2011 from the Bureau of Economic Analysis to US from countries. (in billions $US)

Country	Royalties to US ($US Billions)	GDP ($US Billions)
China	4.1	7,298
Japan	10.6	5,866
Korea	4.5	1,116
Austrialia	3.3	418

Issue 3: China's polices (subsidies to production)

- There is little doubt that China is aggressively subsidizing industries of the future, like green energy (for example China produces most of the world's solar panels)
- The price of solar panels has fallen by two thirds because of the subsidy, what is the optimal response?
- If the US thinks this is a strategic industry with knowledge spillovers and IRS it will probably oppose to this policy
- In the past the solar panel industry filed a complaint about Chinese subsidies, asking the US to respond with a 100% tariff on Chinese imports.

China and US trade: Summary

1. Trade pattern China-US:
   - Ricardian model performs well in explaining composition of products traded based on CA of low skilled labor

2. Volume of trade: Impressive trade with china can be explained in part by:
   - comparative advantage, over-consumption and currency (issue 1)
   - Intellectual property protection issues, (issue 2)
   - and production subsidies (issue 3)

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2. Theory of Public Goods

Theory of Public Goods

- Public and private goods: definitions and examples
- Efficient production:
  - private goods (as before)
  - public goods (example sun in EconLand)
- Policies to achieve efficient production of public goods (gov, tech)
- The tragedy of the commons

Private Goods

We have been making (implicit) assumptions on the type of goods we have considered so far: widgets are private goods

- Private goods have two characteristics: they are rivalrous in consumption and excludable
- Rivalrous in consumption if my consumption restricts yours (I eat it, you can't).
  - Ex: coke, pie, cellphone
- Excludable if people can be prevented from consuming it.
  - Ex: Vikings stadium, coke, pie

Public Goods

On the other extreme: public goods are nonrivalrous and nonexcludable

- Nonrivalrous: if one person's consumption of the good does not impact someone else's consumption.
  - Ex: watching TV, tornado siren, national defense
- Nonexcludable: if people can not be prevented from consuming it.
  - Ex: over-the-air TV or radio, tornado siren, ocean
- Examples of public goods: tornado siren, highways, street lamps, research if there are no patents (anyone can copy it)

Efficient provision with private goods

- With a private good, (according to principle 3 for efficient quantity) we should continue producing as long as marginal benefit > marginal cost
- Example (recall last class or): consider the 1st unit produced in EconLand where MgB=9 (D's valuation), MC=1 so we can make the widget

General rule of efficient provision of private goods:

- Make another unit of output and give it to a person if that person's marginal willingness to pay (MgB) exceeds the marginal cost of producing it

Efficient provision with public goods

Previous rule does not apply for public goods, lets see an example:

- EconLand has no sun, proposal: build an artificial sun, cost $20
- What is everyone's willingness to pay ?
  - Assume D's value sunlight like a private good (like widgets)
- In the free market will the good be produced? (see willingness to sell)

Buyer	Willingness to pay	Seller	Willingness to sell
D1	9	S1	**0**
D2	8	S2	**0**
D3	7	S3	**0**
D4	6	S4	**0**
D5	5	S5	**0**
D6	4	S6	**0**
D7	3	S7	**0**
D8	2	S8	**0**
D9	1	S9	**0**
D10	**0**	**S10**	**0**

Efficient provision with public goods

- From previous table under the free market at a cost of $20 non of our S's are willing to sell since D's willingness to pay don't cover the cost
- Previous principle of private goods would indicate the efficient allocation is 0 but this is not how we calculate it here

Rule: make the good if total social mg. benefit > cost

- Add willingness to pay of each together, why?
  - because if the artificial sun is built we can all get to enjoy it (recall non rival non excludable)
- Social marginal benefit from building the sun is 9+8+7...+1=$45
- Which is greater than $20 so its socially efficient to build the sun

- It's efficient to build but what would be the problem?

Public goods and free rider

From previous table under free market there would be a free rider problem: its worth to do it but no one will be willing to put the whole amount to do it themselves

- In FM who would pay $20?
  - D1 has the highest valuation at $9, but it is still not enough to cover the cost of $20
  - Everyone else have lower valuations no one will sell
- There is a free rider problem: why pay for sunlight when you can enjoy the benefits waiting for someone else to pay?
- The problem here causes no good to be produced

What could be done to achieve efficient provision

- Government: tax
- Market based solution when possible (technology and IP)

The government can come into action by forcing us to pay

- A tax on D1-D4 of $5 each could finance the project
- It would also be a Pareto improvement (no one is worse off: everyone consumes D1-D4 only pay 5 vs no one consume)

One last point:

- because of technological change things that were not excludable can become excludable (ex cable/ pay per view make watching TV excludable) and viceversa (ex internet and news)
- so technology could be other way to achieve efficiency?

Other ways to achieve efficiency

Technology (under intellectual property protection can be another way to achieve efficiency

- Example: suppose you can build an artificial sun where you need a certain kind of sunglasses to see the light
- Entrepreneur build the artificial sun selling sunglasses to people for \$5
- D1-D5 buy (they are willing to pay$\geq$5) and he gets \$25 in revenue, pays \$20 for investment
- The good is now excludable and it will be produced

Technology and Intellectual Protection

Key point: will need intellectual property protection

- If someone can sell bootleg sunglasses, then the entrepreneur unlikely to be able to make a go of it
- So won't get the investment in the first place
- Economic logic of intellectual property protection like patents and copyrights

Common Resources

There are two types of good remaining:

1. Excludable and non rival: “club goods" like country clubs, satellite TV
2. Non excludable and rival: common pool resources:
   - Classic example is world stock of fish in international waters
   - Can be difficult to exclude people from fishing the oceans
   - Certainly rivalrous as overfishing devastates local fish population and depletes the resource

Common pool goods face the tragedy of the commons: depletion of common pool resources, like fisheries, because consumers don't limit their consumption or care for the upkeep of the resource

Tragedy of the Commons

Imagine a common pool resource: a pasture shared by farms for cows to graze on

- Everyone sends their cows to the grass but no one cares for it
- eventually the grass is depleted

This depletion issue is know as the tragedy of the commons

Application:

- Until recently air and water were viewed as public goods
- more recent research is treating clean air and clean water as common pool resources: enough pollution can deplete our stock of clean air and water

Notes

- To see more slides about this topic look at moodle lec 8(i) and first part of 8(ii)
- For trade China-US refer to Reading 5
- Textbook references: Ch 11, 21