Bigger is better: Increasing Returns to Scale and Trade

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- Last Time: The Standard Model
  - Model
    - Focus on PPF and Demand
    - Leave production details unspecified
    - More careful about Demand
  - Growth
    - Export-biased growth is bad
    - Import-biased growth is good
    - Theoretically possible to be hurt by growth
  - Tariffs and subsidies
    - Tariffs on import good improve terms of trade
    - Export subsidy worsens terms of trade
    - Effect on welfare qualified
  - International lending

- This time: Increasing Returns to Scale
  - Krugman: External Economies
    - Larger industries have lower cost
    - Drives industries to concentrate
    - A reason for trade
  - Implications of external economies
    - Historical Accident
    - Money on the table
    - Infant industries
  - Melitz and Krugman: Internal Economies
    - Larger firms have lower cost
    - Each firm a different product or variety
    - Consumers like a mix
    - Reason for trade: more (and cheaper) varieties
  - Applications
    - Dumping
    - Outsourcing
    - FDI

- But first a review!

- End review!

Chapter 7: External Economies

- A trade model quite different from those earlier
  - Technology depends upon scale and experience
  - Best to concentrate production in one location
  - Drives countries to specialize, *even if ex-ante identical!*
- Idea: Larger industries have lower costs
  - knowledge spillovers due to informal interaction
  - Specialized Labor market pooling
  - Specialized suppliers
- Room for helpful government policy
  - Historical accident: Industries can be in the 'wrong' country
  - There can be equilibrium losses from trade!
  - 'Infant' Industries may need early protection from competition

Returns to Scale

even if countries are ex-ante identical!

- IKEA furniture
  - One person: All day to assemble a flipping dresser
  - Two people: Two hours for a dresser
  - Ten people: Can assemble 5 dressers in an hour
  - Factory of fifty people: Can assemble 400 dressers in eight hours
- How many hours per dresser?

External vs Internal Increasing Returns

- Firms or locations?
  - If increasing returns happen within an industry and firm, what would the economy look like?
  - If increasing returns happen within an industry and location, what would the economy look like?
- First: increasing returns within industry and location
  - Firms are very small, no affect on aggregate production
  - The more the industry produces, the lower are average costs
  - Good model for Silicon Valley startups

Decreasing marginal product of labor?

- Specific factors, HO – increase labor, fix capital, decreasing returns to labor
- Now we want increasing returns – what is the argument?
  - Specialized suppliers
  - Labor market pooling
  - Knowledge spillovers

Specialized suppliers

- Production can require very specific inputs
- Maybe:
  - Specialized tool for cleaning button making machines
  - High quality polymers for production of CPU's
  - Chemicals used in pharmaceutical research
- If industry is clusters, suppliers likely to cluster as well
- Costly to open new firm in completely different location

Labor market pooling

- We have been treating labor as costlessly mobile (equal wages)
- Now let's make it totally impossible for labor to move between locations
  - Suppose we have two universities, one in Aarhus and one in Copenhagen
  - Suppose we have 100 economists, 50 in Aarhus and 50 in Copenhagen
- Now suppose that the two universities are hit by demand shocks
  - Enrollment is high at Aarhus university sometimes, need more economists
  - Enrollment is low at Aarhus university sometimes, need fewer economists
- If the two universities were in the same location, sometimes when Aarhus university needs fewer economists, Copenhagen university would need more
  - Better for both universities, who need labor, and economists, who need jobs
  - (or is it?)

Knowledge Spillovers

- Close to my heart
  - Academics spread citations when they move across departments
  - Can't resist showing you a couple of pictures from my paper
- People spread ideas informally and face-to-face
  - The business cliché that water-cooler discussions are more important than formal meetings
  - Recently Yahoo called all telecommuters back
- Why are industries clustered within cities?
  - Labor market pooling and suppliers can't really explain it
  - Vernon Hendersen finds that Ad agencies need to be within 300 meters to gain from external economies

Pause

- We have explained why expect increasing returns at industry-location level
- Next
  - Setup
  - Supply, demand, and equilibrium
  - Autarchy and trade

- To start, simplest possible model
  - One country
  - One good
  - One factor: Labor
  - *External* increasing returns to scale
  - That is: industry/location scale economies

The firm's problem

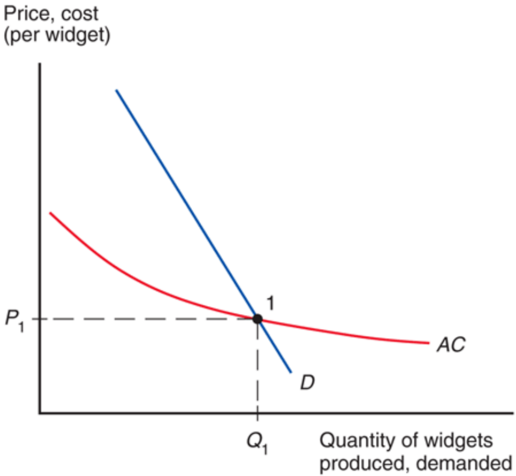
- Firms are really tiny
- They think they do not affect industry wages
- In equilibrium, zero-profits again
- What is the equilibrium wage?

Equilibrium supply and demand

- We have been equating relative supply and relative demand
- Nothing relative here, we only have one good
- Now we are going to equate average cost and demand
- Why does avg. cost have to equal price in equilibrium?
- Hint: Labor gets everything in this model

Equilibrium supply and demand

- Last piece: Average cost is falling due to external economies of scale



- Where does demand curve come from?

Pause

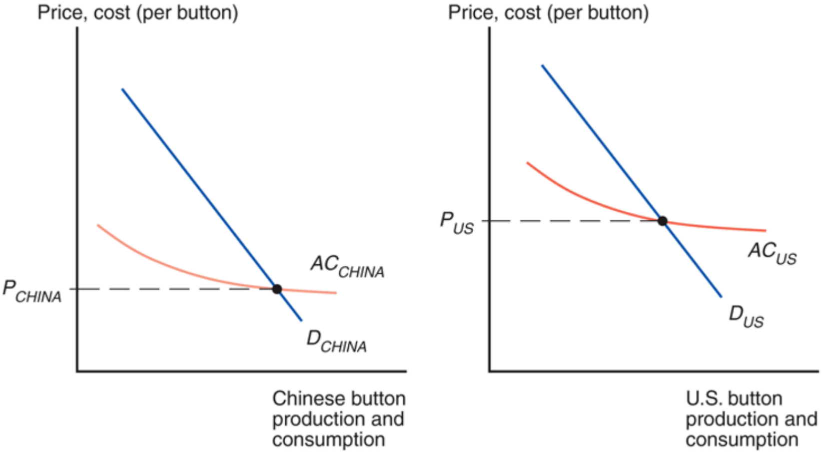
- Simple 1 x 1 x 1 model
- Now add second country
- How does trade affect price?

Trade and External Economies

- Two countries: China and US
- Two goods: Buttons and Not-Buttons
- One factor: Labor
- External economies of scale

No button trade

- Each country makes its own buttons (and not-buttons)



Allow button trade

- Opening to trade
  - China can undercut all American button makers
  - True even if very little Labor in American button making
  - Increasing marginal product of labor (unlike other models)
  - China makes all the buttons
- Scale economies
  - Cost of producing buttons in China goes down
  - Cost of producing buttons in US goes up
  - Cheaper buttons everywhere!
  - What about real wages of Chinese workers?
  - What about real wages of American workers?

Allow button trade