

# Offshoring in a Ricardian World

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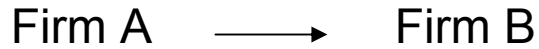
August 2007

# What is offshoring?

- Outsourcing: firms fragment the production process and contract out some tasks
- Offshoring also relies on fragmentation, but emphasis is on the fact that processes take place in different countries.

# Outsourcing vs Offshoring

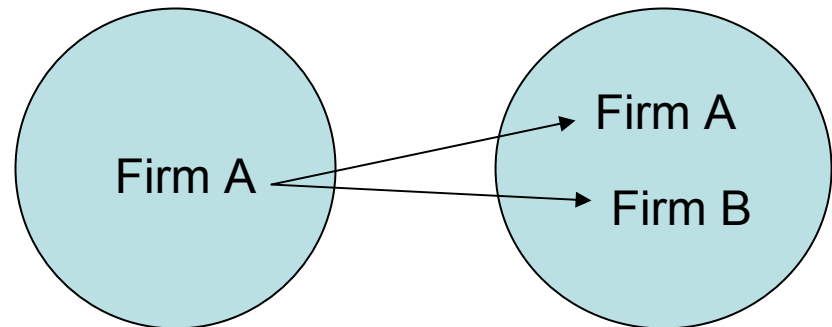
## Outsourcing



## Offshoring

United States

India



# Is offshoring really increasing?

- Some hints (Grossman and Rossi-Hansberg, 2006):
  - Share of imported inputs in total inputs used by goods-producing sectors in US rose from 7% in 1972 to 18% in 2000
  - Intra-firm trade has been increasing as share of total U.S. imports, now it is 47% (increasing rapidly from Taiwan, Korea and China)
  - U.S. imports of BPT services have increased by more than 66% in real terms from 1997 to 2004
  - Increasing share of non-routine tasks

# Focus of talk

- The economic consequences of offshoring don't depend (to a first approximation) on whether it occurs inside or across firms
  - So leave aside issue of ownership of firms and governance and contracts
- Take fragmentation as exogenous, determined by technological progress, mainly ICT
  - Baldwin: the great unbundling

# Focus of talk

Two different issues:

- Consequences of offshoring for the countries taking part in it
- Consequences for different factors of production, and in particular skilled versus unskilled workers
- I will focus here on the first issue.

# Focus of talk

- Offshoring is taking place both in manufacturing and in services.
- Offshoring in services affects white collar jobs, and has generated more discussion recently.
- Here: no distinction between offshoring in manufacturing or services.

# Two views

The positive view:

- Offshoring entails more trade. Since trade is good, then offshoring is good.
- Mankiw: “more things are tradable than were tradable in the past, and that’s a good thing.”

# Two views

The negative view:

- Fragmentation erodes the effect of location on wages, to the detriment of rich-country workers.
- Hira and Hira: “Offshoring affects American workers by undermining their primary competitive advantage over foreign workers: their physical presence in the U.S.”

# Toy model 1: more trade is good

- Labor, US and RW, one final good
- US has higher productivity and wages
- Fragmentation allows some labor services to be unbundled from the production of final good
- If productivity in these labor services is the same in the two countries, then trade/offshoring arises
- Both countries gain from "new trade" linked to fragmentation

# Toy model 2: towards a flat earth

- Labor, US and RW, two final goods
- US has AA in good 1, while productivities are the same in good 2
- If US is not too large, then it will specialize completely in good 1 and enjoy a higher wage than RW (non FPE)
- Fragmentation leads to trade, an increased US supply of good 1, and a deterioration of its ToT
- If fragmentation is sufficiently strong, then GT vanish for US and wages become equalized (FPE)

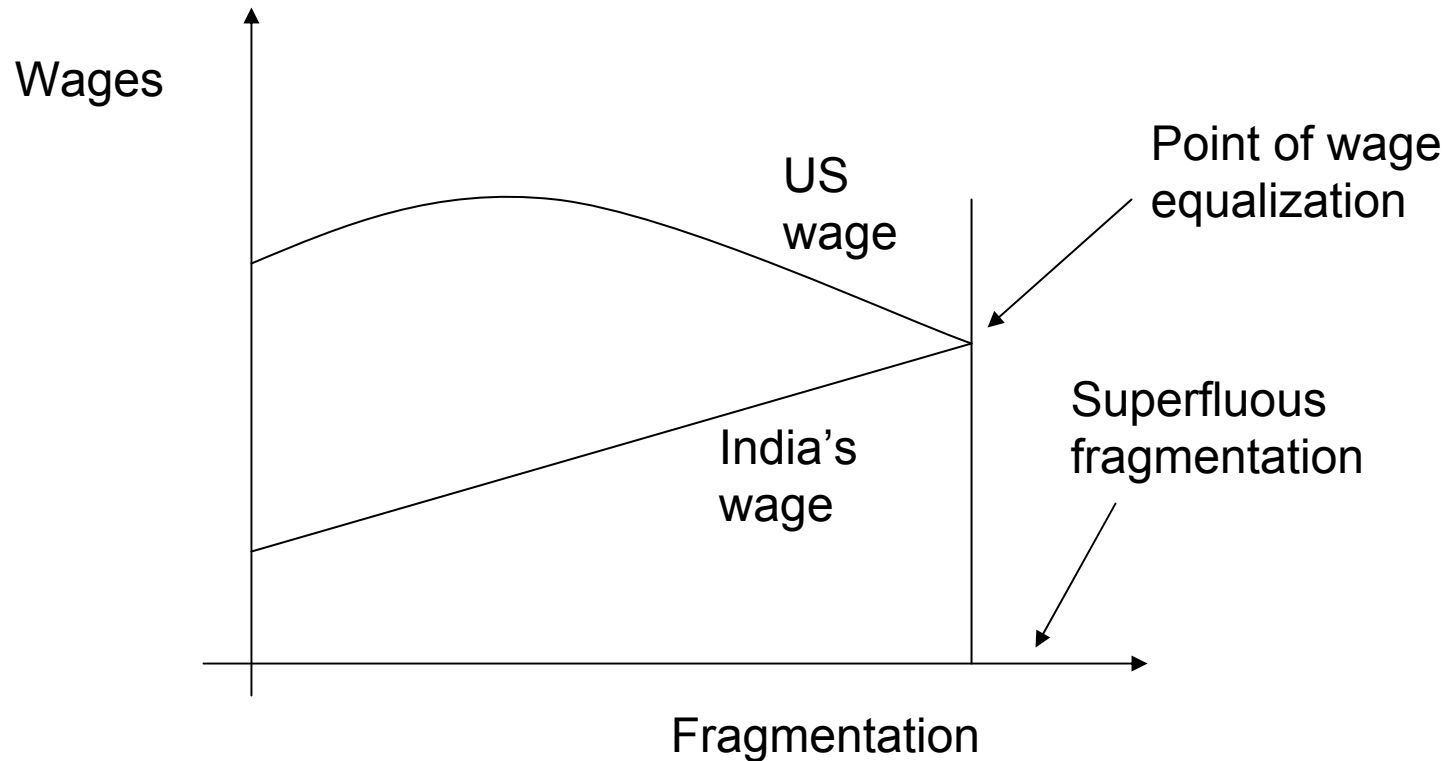
# Opposite effects

- So both views seem to be right!
- Consider the U.S. It has a strong productivity advantage in some industries, but many tasks within these industries could be equally performed abroad.
- Fragmentation allows U.S. firms to offshore these tasks to lower wage countries and lower costs
  - Productivity gains related to the gains from trade as more things become tradable.

# Opposite effects

- But this allows U.S. to expand supply, leading to a deterioration of its terms of trade.
- Two opposite effects: productivity effect (+) and TOT effect (-)
- In the limit, as fragmentation goes to infinity, TOT necessarily dominates and wages become equal.

# Opposite effects



# The Model – basic assumptions

- EK's Ricardian model of trade with labor, a continuum of goods and many countries
- Productivities for goods in each country are drawn from a distribution that differs across countries only in  $T$ 
  - Higher  $T$  means absolute advantage in more sectors
- With no trade costs, wages are determined by  $T/L$

# The Model – fragmentation and offshoring

- Production of each good entails the combination of a continuum of labor services
- Fragmentation allows a share of these services to be offshored at no cost and with no loss of productivity
- In equilibrium high T/L countries offshore part of their production to low T/L countries

# The model – results (intuition)

- Both effects are present:
  - Gains from new trade - productivity effect
  - Movement towards wage equalization - ToT effect
- There is also a world efficiency effect
- Poor countries always better off
- Rich countries may win or lose from increased fragmentation
  - Analysis reveals that the real wage behaves like an inverted U
  - For high enough fragmentation, increased fragmentation always leads to a fall in the real wage
- An import tariff or export tax would prevent real wages in the rich country from falling with more fragmentation

# The long run

- The previous model assumed that workers released from some duties by offshoring become employed in the same industries in other tasks
- Instead, it could be that labor released from simple tasks allows more labor (not necessarily the same) to do more of what leads U.S. to have a productivity advantage in the first place

# The long run

- We have to endogeneize the determinants of productivity differences across countries.
- U.S. (rich countries) have real advantage in research that leads to productivity advantage in many areas
- Model considers allocation of workers between research and production. Offshoring affects this allocation.

# The long run

- There is a new positive effect for U.S.: the research effect.
- For poor countries this effect is negative: by devoting more labor to simple tasks for rich countries, they reduce R&D.
- It is shown that now the net steady state effect is always positive in U.S and neutral in India.
- Key insight: offshoring allows U.S. to focus on its real comparative advantage, R&D

# The Model – long run

- In the long run  $T$ 's are endogenous, determined by "research" efforts
- Offshoring releases resources that may find their way into increased research
  - From routine, to creative jobs
- This would increase  $T/L$  in rich countries --> positive research effect
- Analysis shows that the net effect is always positive for rich countries
- For poor countries, there is a negative research effect which exactly compensates the ToT effect
  - Poor countries gain just from the world-efficiency effect, just as third countries

# The model - dynamics

- For rich country, there is an ambiguity
  - Effect may be negative in the short run and positive in the long run
- The full dynamic analysis (for small economy) reveals that the net effect is positive if “labor flexibility” is sufficiently high
- Since increased fragmentation is a gradual process...
  - ... what matters is the speed at which fragmentation increases vs flexibility with which resources can be reallocated towards R&D

# Offshoring vs Immigration

- Immigration to the rich country also expands supply and worsens ToT
- Since there are no positive productivity effects, then the net effect is negative in the short run
- But in the long run there is an increase in research efforts which exactly offsets the ToT effects
- All countries gain equally, and the main beneficiaries of migration are the migrants themselves

# Offshoring vs Immigration

- How do these results compare to the long run effects of offshoring?
- We see that (in the long run) offshoring is better for the rich country than immigration
  - The reason is that with migration the receiving country ends up paying the high rich-country wage to immigrants...  
... whereas with offshoring firms in the rich country pay poor-country wages to workers who remain there

# Conclusion

- Short run effects can be negative for rich countries
- Rich countries could prevent such a negative effect with an “optimal tariff”
- But this would eliminate long run gains that arise thanks to increased allocation to R&D
- The net effect in rich countries depends on balance between the speed at which fragmentation increases and the speed at which labor can move to R&D
- For poor countries, the short run effects positive, while the long-run effect is positive thanks to a worldwide efficiency effect
- Offshoring is better than immigration for rich countries, and the opposite is true for poor countries