

# Economics 404W

## lecture 23

Professor Tybout  
April 6, 2006

Note: Next writing assignment due Tuesday, April 11

## How important are tariff-induced efficiency losses?

Example: The “Uruguay Round” of global trade negotiations took place in the late 1980s and early 1990s. It covered 7 major areas:

- Tariff reductions in manufactured products
- “Tariffication” of non-tariff barriers in agriculture, as well as binding commitments to reduce the level of agriculture protection.
- Reduction of export and production subsidies in agriculture.
- Elimination of Voluntary Export Restraints and the Multi-Fiber Arrangement (by 2005).
- Institutional and rule changes, such as the creation of the WTO and safeguards, antidumping, and countervailing duty measures.
- New areas such as TRIMs, TRIPs, and GATS
- Customs valuation reform

## Quantitative effects of tariffs on efficiency

- Reductions in agricultural protection.
  - Convert all NTBs to tariffs; reduce tariffs by an average of 36 percent. But the base year of 1986-88 was used, when world prices were exceptionally low, and thus implicit protection exceptionally high.
- Reductions in manufacturing protection
  - Tariffs came down by a significant fraction with the Uruguay round, but for the most part they started from low levels, so the effect was not dramatic.
  - The North protected against Southern exports more than Northern exports, while the South protected against Southern exports more. Why?

**Annual Impact of Uruguay Round (1992 US \$ billions)**

	Agriculture Reform	MFA Reform	Manufacturing Reform	Complete Reform Package	Complete Reform as Percent of GDP
United States	1.659	10.136	0.772	12.842	0.2
Canada	0.238	0.939	-0.045	1.16	0.2
Japan	15.232	-0.531	1.978	16.692	0.5
European Union	28.539	7.624	2.311	38.845	0.6
China	-0.561	0.876	0.915	1.174	0.3
Singapore	0.623	-0.149	0.45	0.918	2.1
Thailand	0.747	0.065	1.732	2.435	2.1
Malaysia	1.225	0.082	0.696	1.864	3.3
Sub-Saharan Africa	-0.292	-0.112	-0.005	-0.418	-0.2
Middle East, N. Africa	-0.448	-0.499	0.624	-0.388	-0.1
Eastern Europe, FSU	-0.246	-0.627	0.526	-0.421	-0.1
South Asia	0.097	0.629	2.73	3.286	1
Developing Countries	9.213	-2.314	11.602	17.651	0.4
Industrial Countries	49.095	18.264	7.152	75.208	0.4
World	58.309	15.95	18.755	92.859	0.4

## Effects of the tariff

- In terms of factor payments, who are the winners and losers from protection?
  - With competitive factor markets, each factor is paid the value of its marginal product. Letting  $q$  denote the rental cost of land,  $w$  denote the wage rate, and  $r$  denote the return on capital:

$$r = P_y MP_K^y \quad q = P_x MP_N^x$$

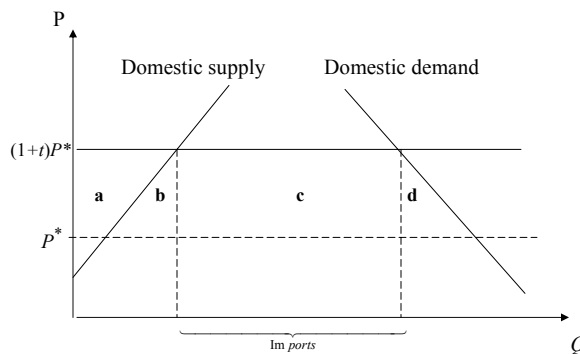
$$w = P_y MP_L^y \quad w = P_x MP_L^x$$

- So real factor returns are determined by:

$$\frac{r}{P_y} = MP_K^y \uparrow \quad \frac{q}{P_x} = MP_N^x \downarrow$$

$$\frac{w}{P_y} = MP_L^y \downarrow \quad \frac{w}{P_x} = MP_L^x \uparrow$$

## Partial equilibrium analysis of tariffs



## External Economies of Scale and Trade

- Some governments fear that without protection, their manufacturing sectors won't survive because they're too small to be efficient.
- It's not that any one plant is small, it's that there are interactions between producers, and you need lots firm to do this efficiently.
  - scale economies in support services (transport, communications, banking),
  - information spillovers
  - specialized labor pool

## External Economies and Trade

- Is it possible that liberalization can actually make a country worse off when these effects are important?
- Consider a simple model with 2 countries (North and south), 2 sectors.

Output requires only labor. It is subject to constant returns in the fish sector, and increasing returns in chips. Unit labor requirements are given below:

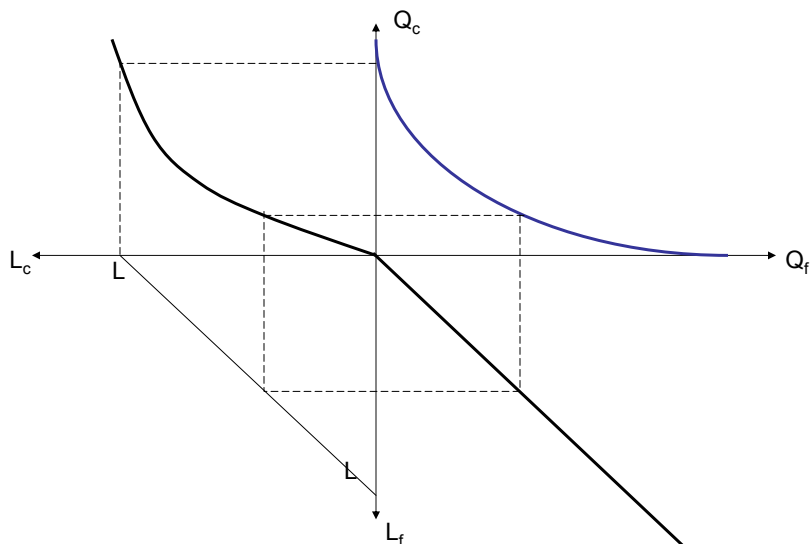
– CRS: fish  $a_f^s = a_f^n = a_f$  (constant)

– IRS: chips  $a_c^s = A(Q_c^s)$      $a_c^n = A(Q_c^n)$      $A' < 0$

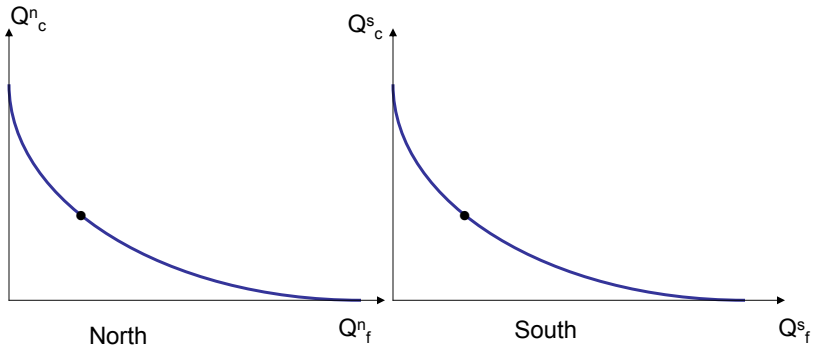
## External Economies of Scale and Trade

- Perfect competition implies production (labor) costs are exactly covered. For example, in the chip sector of the home country,  $P_c = wa_c$ ,

## External Economies of Scale and Trade

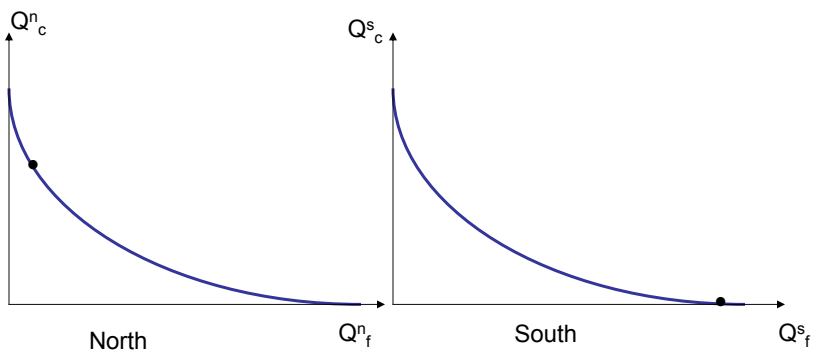


## External Economies and Trade



In autarky, i.e., without trade, both regions produce both goods.  
(Indifference curves are omitted here.)

## Scenario 1: Both produce fish



Now imagine opening to trade, and suppose world demand is such that both countries produce fish:  $P_f^* = a_f w^n = a_f w^s$

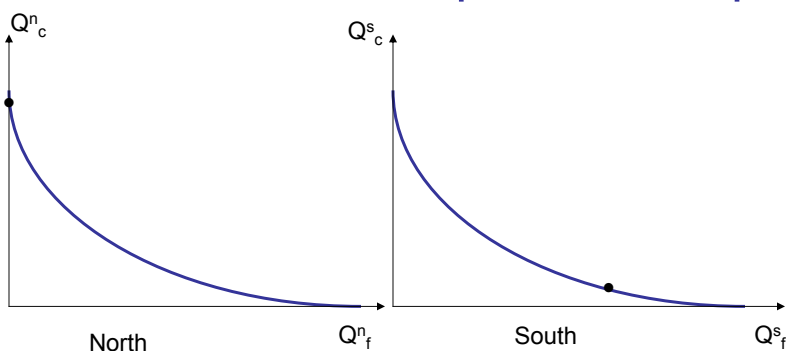
Then  $w^s = w^n$ , and only one country will produce chips. Why?

## Both produce fish, continued

- As the chip producer moves toward specialization in chips and unit production costs fall, so the cost of producing a unit of chips falls (globally), and both countries benefit.
- To be concrete, suppose the foreign country captures the chips market. Purchasing power in terms of chips improves. Purchasing power in terms of chips remains unchanged.

$$\frac{w^n}{P_c^*} = \frac{1}{A_c(Q_c^n)} \quad \frac{w}{P_f^*} = \frac{1}{a_f}$$

## Scenario 2: Both produce chips



Imagine instead that world demand is such that both countries produce chips when they open to trade:

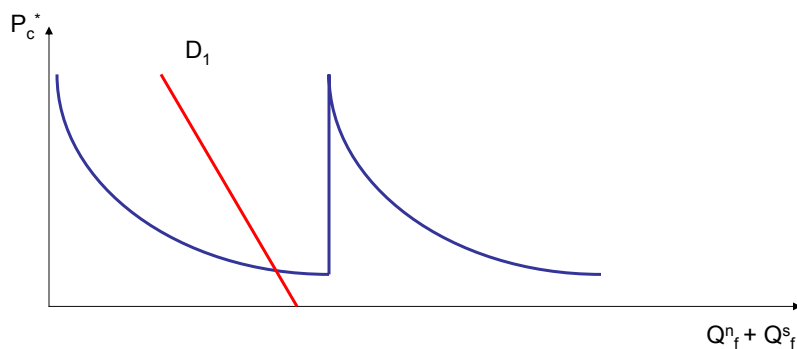
Then South loses from trade. Why?

$$\frac{w^s}{P_c^*} = \frac{1}{A_c(Q_c^s)} < \frac{1}{A_c(Q_c^n)} = \frac{w^n}{P_c^*}$$

## Both produce chips, continued

- Why does the south lose from trade?
  - Since chip production fell in south, wages fell relative to the price of chips there.
  - The opposite happened in the north—wages rose relative to the price of chips because northern chip production got more efficient.
  - Further, southern wages remained constant relative to fish prices, so the north gained in terms of fish purchasing power too.

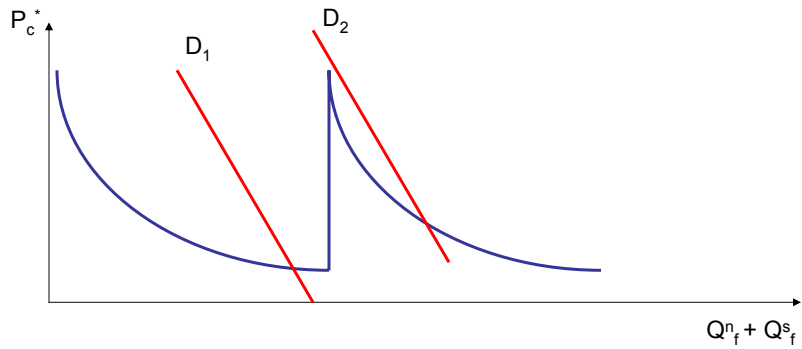
## Both produce chips, continued



Imagine holding wages constant at the same level in both countries, as we saw must occur in scenario 1. Then the global supply of chips will look something like the blue curve above.

These supply curves have downward slopes over regions where average production costs are falling.

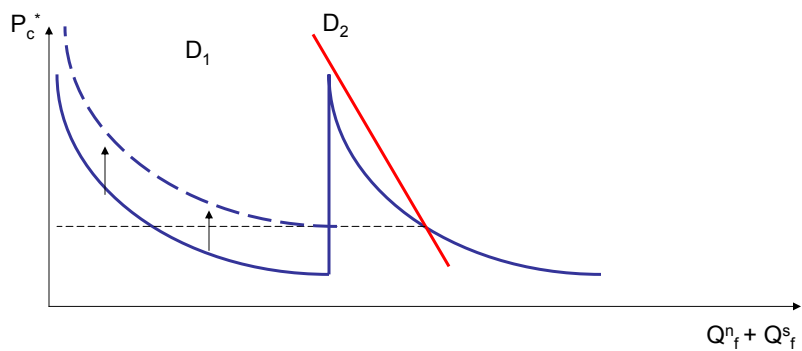
## Both produce chips, continued



If demand shifts out from  $D_1$  to  $D_2$ , the price of chips must rise because the marginal supplier is very inefficient.

The higher prices create profits for the country that is specialized in chips, and cause wages to rise there until profits are eliminated.

## Both produce chips, continued



The higher prices create profits for the country that is specialized in chips, and cause wages to rise there until profits are eliminated.

So wages become higher in the north than in the south.

## Both produce chips, continued

- **Is this a realistic scenario?**
  - No, demand for increasing returns (high tech) goods isn't large enough for these goods to force the north to specialize.
  - So according to this model, South could benefit from trade by specializing in fish (agriculture) and letting North do all the IRS production. If it insists on producing IRS goods too, its going to be very inefficient.