

TRADE WITH SCALE ECONOMIES AND IMPERFECT COMPETITION (CONT'D)

OLIGOPOLY

Example using numbers from Precept Week 7 slides, pp. 2, 3.

Ingredients: Industry with inverse demand curve $P = 200 - Q$

Partial equilibrium analysis: we take costs as given exogenously

Implicit assumption: this industry is small part of whole economy,
so it does not affect prices of factors that are mobile across sectors.

In context of trade, any imbalance of trade in this industry is offset in others

Case 1: Monopoly with $MC = 100$: $P = 150$, $Q = 50$,
Profit = 2500, Consumer surplus = 1250

Case 2: Cournot duopoly with $MC_1 = 100$, $MC_2 = 120$

$Q_1 = 40$, $Q_2 = 20$; $Q = 60$, $P = 140$;

Profit₁ = 1600, Profit₂ = 400, cons. surplus = 1800

DUMPING

Brief statement here; more details later.

Definition: Country A firm is dumping in country B if its price in B is less than either its price in A or its unit cost of production in A

Dumping complaints initiated by US firms

[1] Commerce Department rules on whether dumping has occurred and calculated the “dumping margin.” Almost always sides with US firm, using methods of imputing higher costs / home prices to foreign firms

[2] International Trade Commission rules on injury to US industry

More objective, rejects almost half the cases

If both tests passed, anti-dumping duty equal to “dumping margin” imposed (or some negotiated settlement reached)

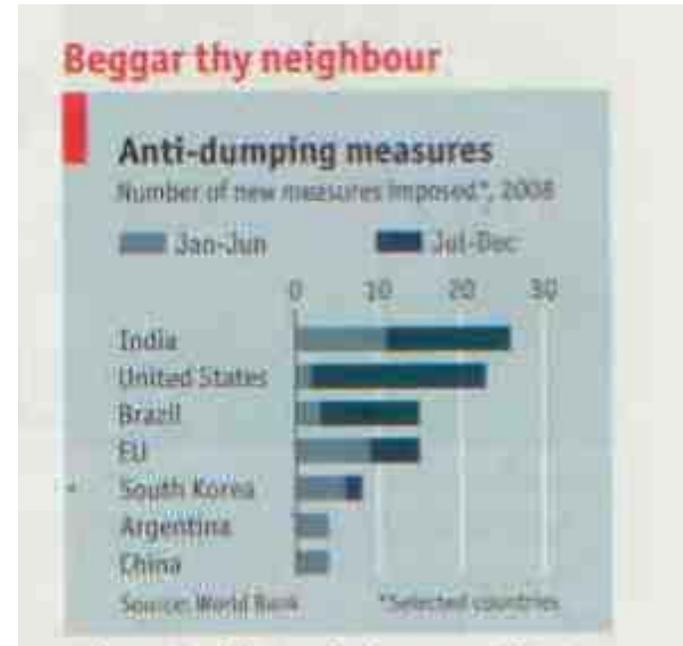
Other countries have related laws

Dumping complaints increase in recessions

Chart show 2008 World Bank findings

China has initiated many complaints in 2009

Retaliatory actions can start trade war



Why aren't countries happy to receive cheap goods from abroad?

If perfect competition, dumped-upon country gets aggregate gain (but conflict)

If imperfect competition, aggregate loss is possible (not inevitable)

Hypothetical, but plausible model of US auto market in the 1980s?

Japanese and US auto markets "segmented" - third party buyers or consumers cannot arbitrage by buying in cheaper market to sell in dearer.

Japan's auto market is monopoly with $MC = 100$. Price in Japan = 150

US is a duopoly. Both firms have $MC = 100$ for production, but

Japan incurs transport cost 20 to deliver to US market, so delivered $MC = 120$

Price of autos in US = 140. Japan's share of US auto market = $20/60 = 33\%$

US accuses Japan of dumping: Selling in US market below price in Japan

But this is standard business strategy: price discrimination when different markets or market segments have different price elasticities.

US in autarky would have Profit = 2500, consumer surplus = 1250, total 3750

US in duopoly has US firm's profit = 1600, consumer surplus = 1800, total 3400

So US can have aggregate loss!

Usual conflict of interest in US: producers lose and consumers gain

What's new here is that producers' loss can exceed consumers' gain

RECIPROCAL DUMPING

Hypothetical example pre-EU: France and Germany

Markets segmented: No third-party or consumer arbitrage

Each market has separate demand curve: $P = 200 - Q$

Each country's auto firm has MC of production = 100, same as MC in own market.

Each has cost of transporting to other country = 20 so delivered MC = 120

Autarky: Each country has its domestic monopoly, so $P = 150$, $Q = 50$

Profit = 2500, Consumer surplus = 1250, Total surplus = 3750

Trade: Each country has duopoly, $P = 140$, $Q = 60$ of which imports = 20

Each has consumer surplus = 1800

Profit = 1600 in own market + 400 in export market = 2000

Total surplus = 3800

Both countries have gained from this back-and-forth trade in identical goods and despite having to incur costs for transporting the exports.

Reason: import competition keeps prices lower; consumer surplus increases

Trade competition acts like regulatory discipline on monopolist.

EXTERNAL ECONOMIES

Each firm can produce one unit of output at cost $50 + 125 e^{-(n-1)/50}$

where n is the number of firms = industry output

This becomes the forward-falling industry supply curve $P = 50 + 125 e^{-(n-1)/50}$

Demand $P = 200 - Q$

Autarky equilibrium

One firm enters on its own

because $199 > 175$

Then more ... until $Q = 140, P = 60$

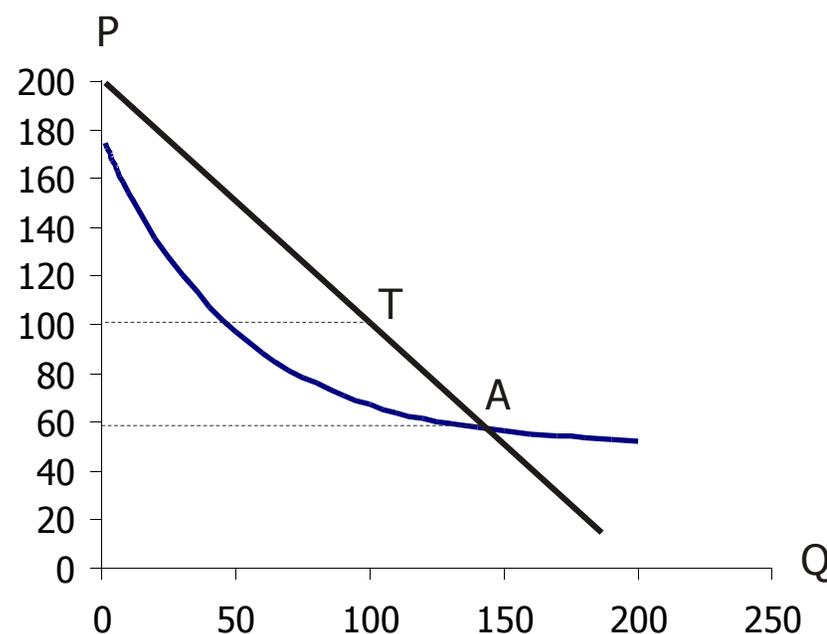
Trade: Can import at 100

Our industry never gets going

unless 50 or more firms

can coordinate and enter

If started, we could be exporters



“Infant industry” argument for protection? For industrial policy? For subsidy?

Brief discussion of these policies (more later):

Protection: Ban imports temporarily until we have 50 or more firms

Then can remove trade barriers but they won't be needed anyway

Problem: Actual process is dynamic. May take time for this to be reached.

Until then, our consumers will be paying high prices, initially 175,

or even worse if the few first entrants form an oligopoly.

Industrial policy: Government coordinates 50 or more firms to act at once.

Usually must provide them with startup capital or subsidy or protected market.

Question: How to choose industries? Does government know learning curve?

If it must rely on information from potential entrants, they can manipulate this, to get advantage of the initial phase of subsidy or protection.

Sometimes the infants get used to the subsidy or protection and never grow up; using political means (lobbying etc) to get continued support.

Thus: Infant industry argument has some theoretical justification.

But can be exploited by special interests, so needs careful implementation.

Support by subsidy better than that by import barriers:

consumers don't pay high prices; timing can be limited for budget reasons.

TRADE COSTS AND MARKET SIZE

Consider trade between two countries or regions of different sizes

Labor not mobile across regions; each has its separate labor market

If there are no trade costs (transport, insurance, tariffs & other barriers, ...)

firms will be indifferent about their choice of location (small or large market)

In equilibrium, each region will get firms in proportion to its size,

wages will equalize across regions.

If there are trade costs, larger regions will be more attractive locations for firms

They will be willing to pay higher wages (and prices for other immobile factor)

Larger regions will be home to disproportionately more firms, have higher wages

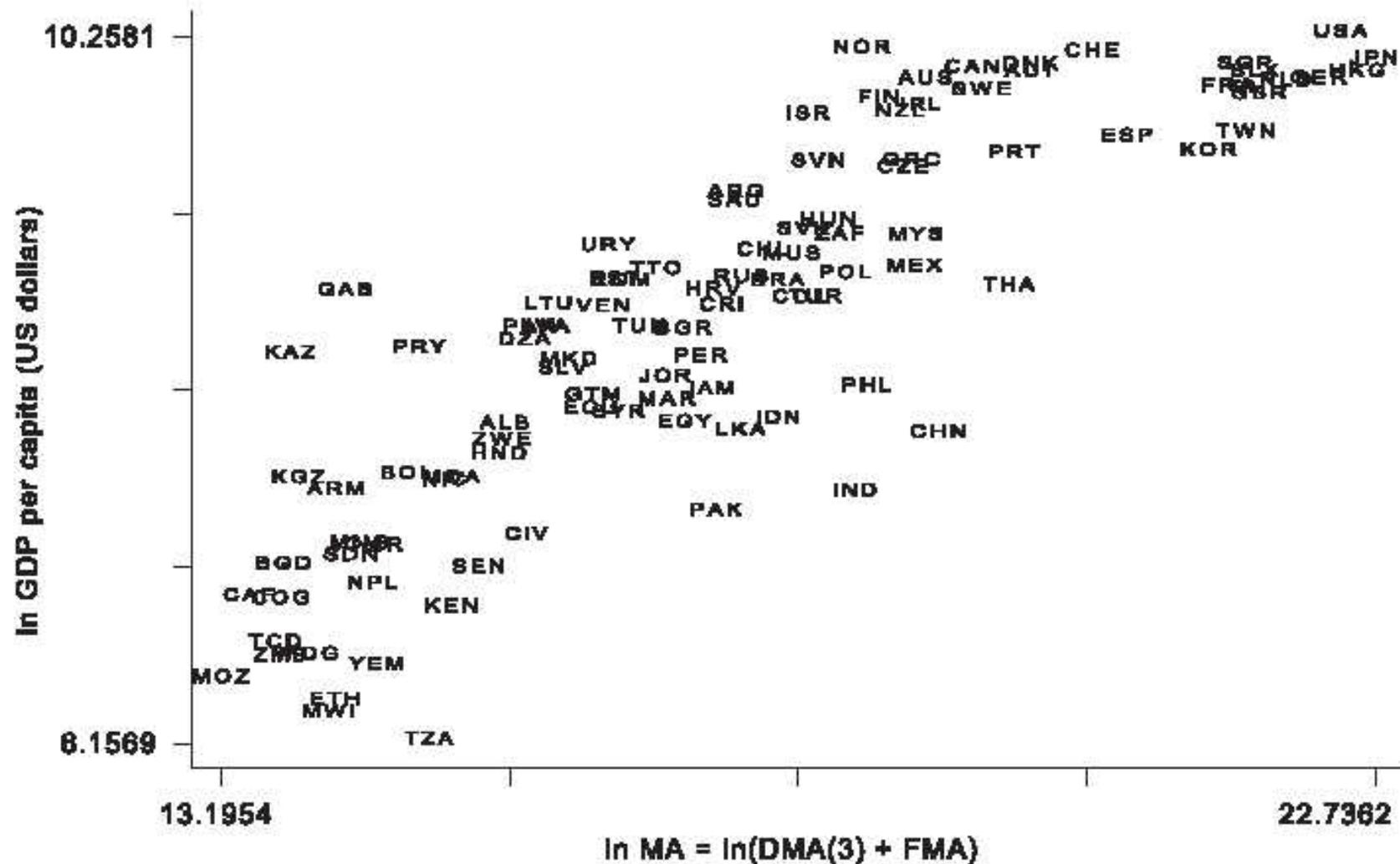
Regions includes small countries located near large ones, such as Belgium.

Regions with large total (home + nearby countries) market access

will have higher GDP per capital (controlling for other effects)

This is the starting idea of Krugman's "new economic geography"

Empirical evidence on effect of total market access:



CROSS-FIRM TECHNOLOGY DIFFERENCES

Even within narrowly defined sectors/industries, firms differ substantially productivity (technology), size, and export performance

- [1] Only a small proportion of firms in a sector do any exporting
In US manufacturing, the average is 18%
Even Computers, electrical equipment, chemicals manage only 36-38%
- [2] Firms that export use very different technologies than those that don't export
They have much higher productivity
- [3] Trade liberalization (reduction in trade costs) affects these firms differently:
Non-exporting firm are more likely to exit
Exporting firms are more likely to expand
- [4] This has important implications for effects of trade liberalization:
"Composition effect" of shift toward higher-productivity, exporter firms
raises average productivity of the sector as a whole

Need theoretical framework to understand /explain these facts.

Sector with differentiated products and monopolistic competition
 Similar demand curves for all firms
 Firms have fixed costs F , and constant marginal cost c
 marginal cost differs across firms

Figure shows two firms, with $c_1 < c_2$
 Firm 1 with better technology

[1] chooses a lower price ($P_1 < P_2$)

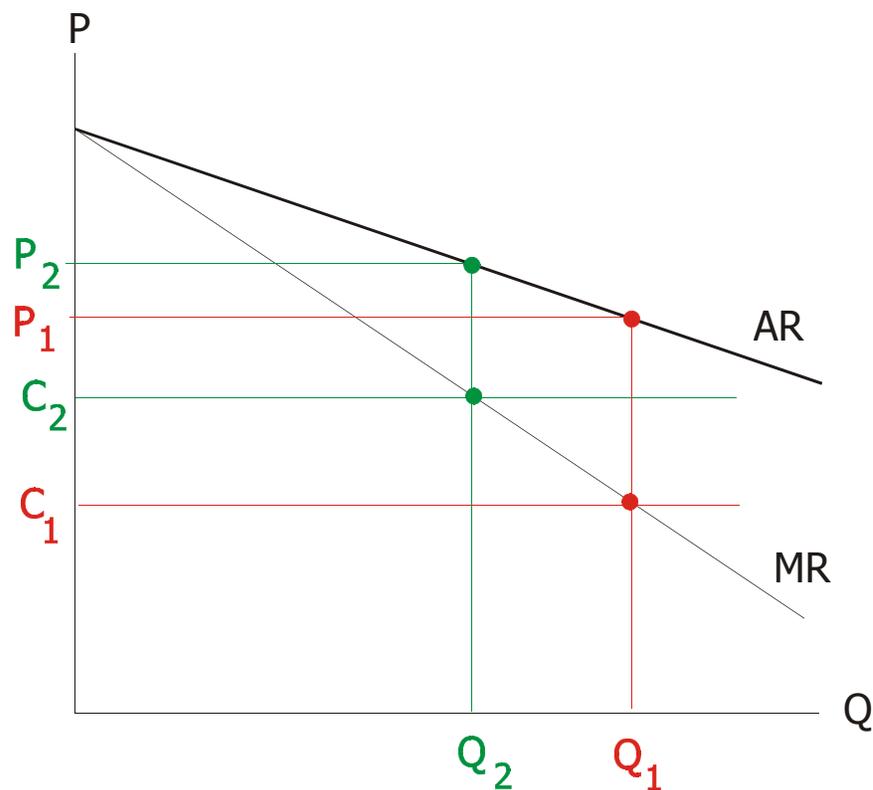
higher markup ($P_1 - C_1 > P_2 - C_2$)

[2] is bigger ($Q_1 > Q_2, P_1 Q_1 > P_2 Q_2$)

[3] has higher profit

$$(P_1 - C_1) Q_1 - F > (P_2 - C_2) Q_2 - F$$

The figure depends on linear demand
 but results more general, require
 elasticity of demand > 1 , and a
 stability-type condition.



There is a cost cutoff \hat{c} such that a firm with $c > \hat{c}$ will not operate.

Implications for trade:

If there are no trade costs, then any firm that stays in operation will export

If there are trade costs, either per unit (transport, tariff, insurance), or fixed (setting up marketing and distribution channel, complying with product regulation)
Then only the more productive firms (low c) will export

Trade liberalization reduces trade costs. Effects of this:

Foreign firms' \hat{c}^* for entering the home market is reduced; more of them enter.
Home firms face stiffer competition (downward shift of their demand curve)
So those with relatively high costs c will exit, those with low c (high output) stay

Home firms' cutoff \hat{c} for exporting to the foreign market is also reduced
More of them, from the relatively low c (high productivity) end can export
But they also face stiffer competition at home
On the whole, empirically the former effect dominates

Average productivity of the sector rises because of this composition effect:
exit at high end of distribution of c , expansion at the lower end

Empirical evidence for the composition effect:

Chilean trade liberalization 1979-85:

19% productivity increase, of which 2/3 due to composition effects

U.S.: a 1% decrease in trade costs is associated with

a 4% increase in the probability of exit of non-exporting firms in that sector

(There is virtually no change in the probability of exit of exporting firms.)

Canada: US-Canada free trade agreement 1989-96

Lower Canadian tariff effects on import competing Canadian sectors:

A 12% employment decrease and 15% increase in productivity
(half comes from composition effects)

Lower US tariff effects on Canadian export sectors:

No employment change and 14% increase in productivity