CHAPTER 6

ECONOMIES OF SCALE, IMPERFECT COMPETITION, AND INTERNATIONAL TRADE

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New trade theory: Intellectual history

- Intellectual history: New Stylised Facts
  - Up to 1970s, trade economists had little access to computers and large data sets
    - HO model dominated trade economists thinking
  - In 1974, Grubel & Lloyd published a book which showed most of the world's trade was not easily explained by naïve HO model.
  - Main difficulties were:
    - Most of world trade was "Intra-industry trade (IIT)", i.e. two-way in similar goods
      - HO predicts nation's imports and exports consist of very different goods i.t.o. factor content.
    - Most of IIT was between nations that seemed to have similar relative factor endowments.
      - HO predicts little trade between nations with similar factor endowments

New Trade: Intellectual history (cont'd)

- Grubel & Lloyd thought increasing returns to scale (IRS) were important.
  - Quite a number of non-mathematically economists knew about importance of IIT and had putforth informal analyses, most of which focused on IRS.
  - Basic idea was simple; trade occurs when things are made in one nation & consumed in another. IRS explains why production of particular goods is concentrated in a single nation rather than dispersed among all nations. This, plus the broad similarity of tastes among rich nations explains IIT.

New Trade: Intellectual history (cont'd)

- At about same time, microeconomists developed tools for dealing with IRS in G.E. settings
  - Dixit-Stiglitz
  - Lancaster
- In late 1970s & early 1980s, a few theorists showed that when IRS and/or Imperfect Competition (IC) was modeled in GE, IIT arose very naturally.
  - Krugman, Brander, Norman, Helpman, Markusen
- This was the 'new trade theory'
  - It proved useful for understanding many aspects of the real world that 'old trade theory' (=Ricardo, Ricardo-Viner & HO) had to assume away due to Perfect Competition (PC) and Constant Returns to Scale (CRS).
- Classical economists had many of the ideas but not the maths to crystallize the logic.

New Trade: Intellectual history (cont'd)

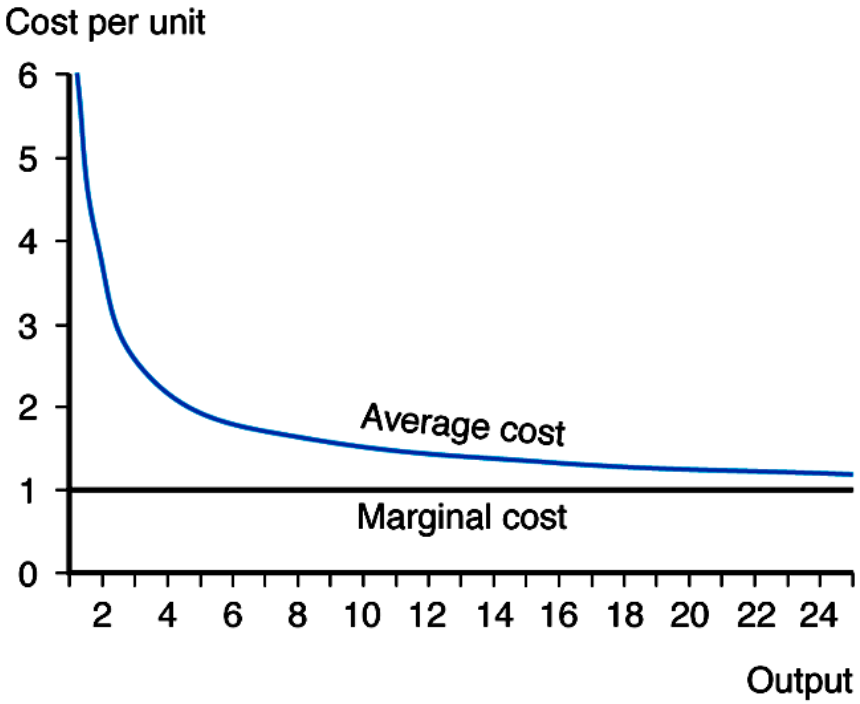
- Pioneers:
  - Paul Krugman, articles in 1979, 1980, 1981.
  - Jim Brander, thesis in later 1970s, articles in 1982, 84 (with Krugman) & strategic trade policy (with Barbara Spencer) in mid 1980s.
  - Elhanan Helpman, articles in 1981 and books in 1985 & 1989 (with Krugman). MNCs in 1984.
  - Jim Markusen, articles in 1980 and on MNCs in 1984.
  - Many others.

Krugman model: basic idea

- Ricardo, Ricardo-Viner & HO models all focus on differences between nations as a source of trade.
- Krugman model focuses on geographical concentration of varieties.
  - Trade = made in one nation & purchased in another.
- Internal IRS explains why prod'n concentrated geographically.
- Resource constraints & IC explain why identical nations would each make some unique varieties.
  - One nation cannot make all (resource constraint).
  - Each firm makes unique variety to avoid direct competition.
- Each nation makes some unique varieties, but buys some of every variety, so we see IIT between similar (even identical nations).

New trade: Key elements, IRS & IC

- 1 Key element is IRS
  - Internal to firm (i.e. firm sees its AC fall with its output)
  - External to firm (i.e. firm sees its AC fall with industry output, but believes its AC are constant w.r.t. its own output, i.e. it is atomistic)



Firm-level output (internal IRS)
Sector-level output (external IRS)

New trade theory: Key elements (cont'd)

- Internal & External have very different consequences & models, so deal with them separately.

New trade theory: Key elements (cont'd)

- Other key element is Imperfect Competition (IC).
- External IRS can be done with PC.
- Internal IRS requires consideration of IC
  - IRS means AC>MC
  - P=MC<AC means losses, so need P>MC to have non negative profits.
  - P>MC means IC
- Need to have a refresher on IC …

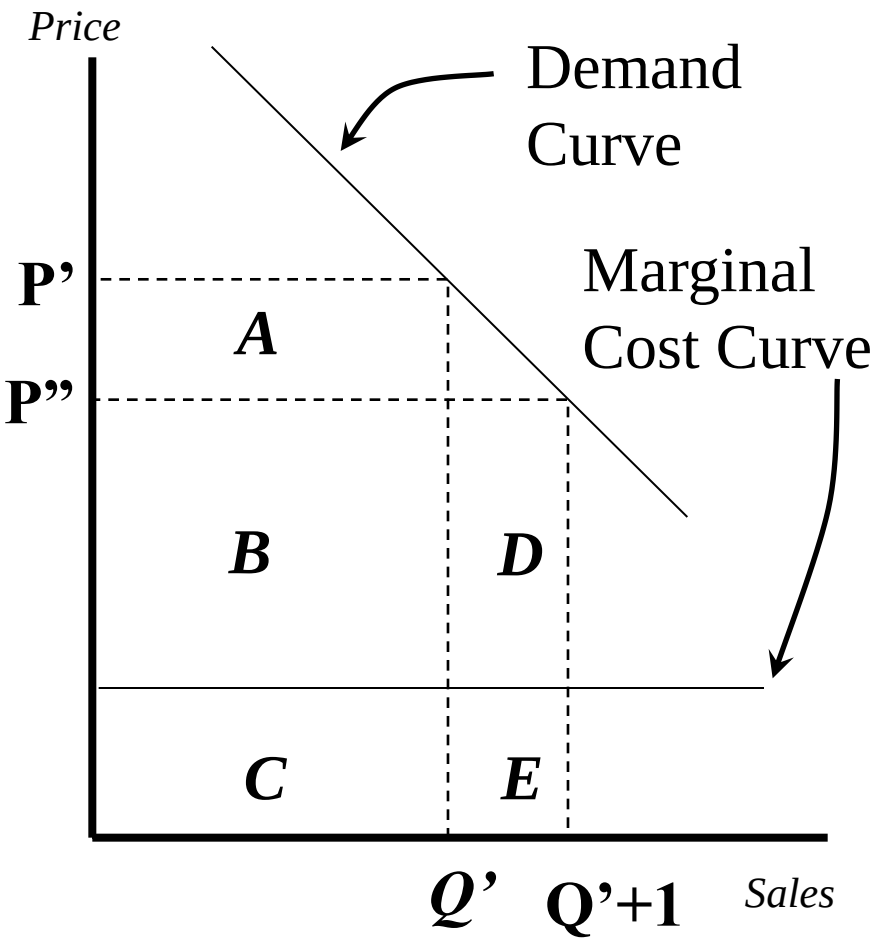
Basic IC theory

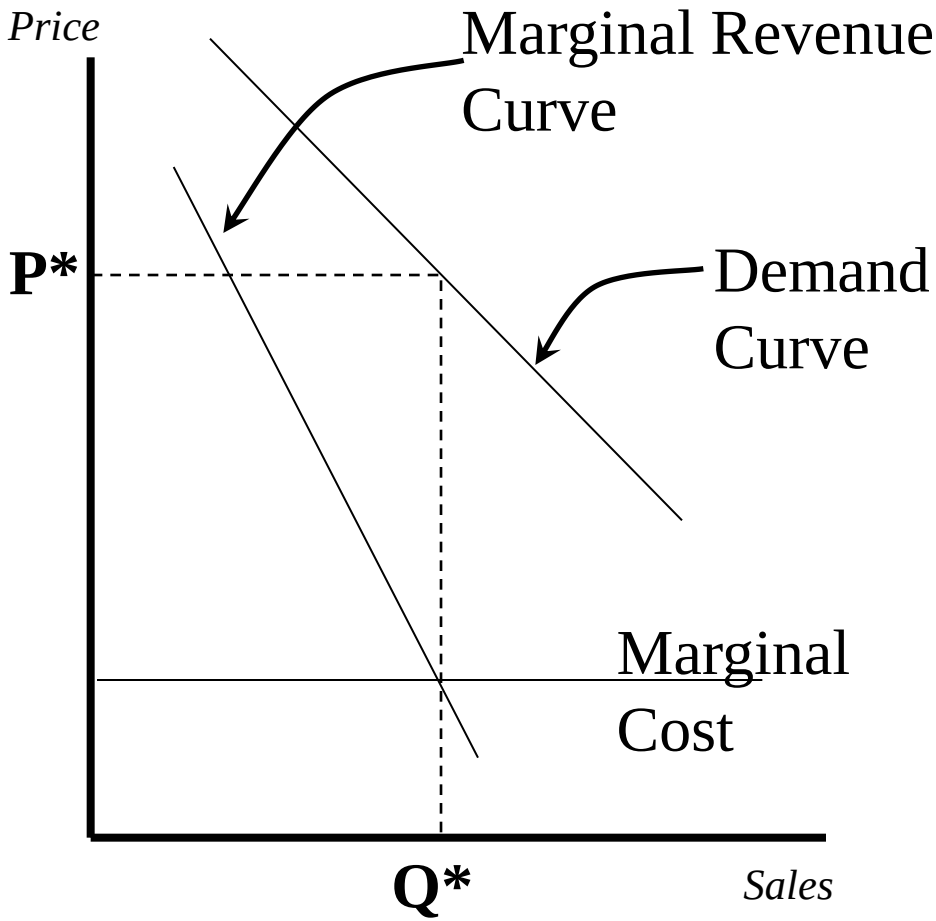
- Monopolist case
  - Easiest example since no strategic interactions.
  - Turns out most important elements of IC can be understood from the monopolist case
- We start with a closed economy.

Monopoly background

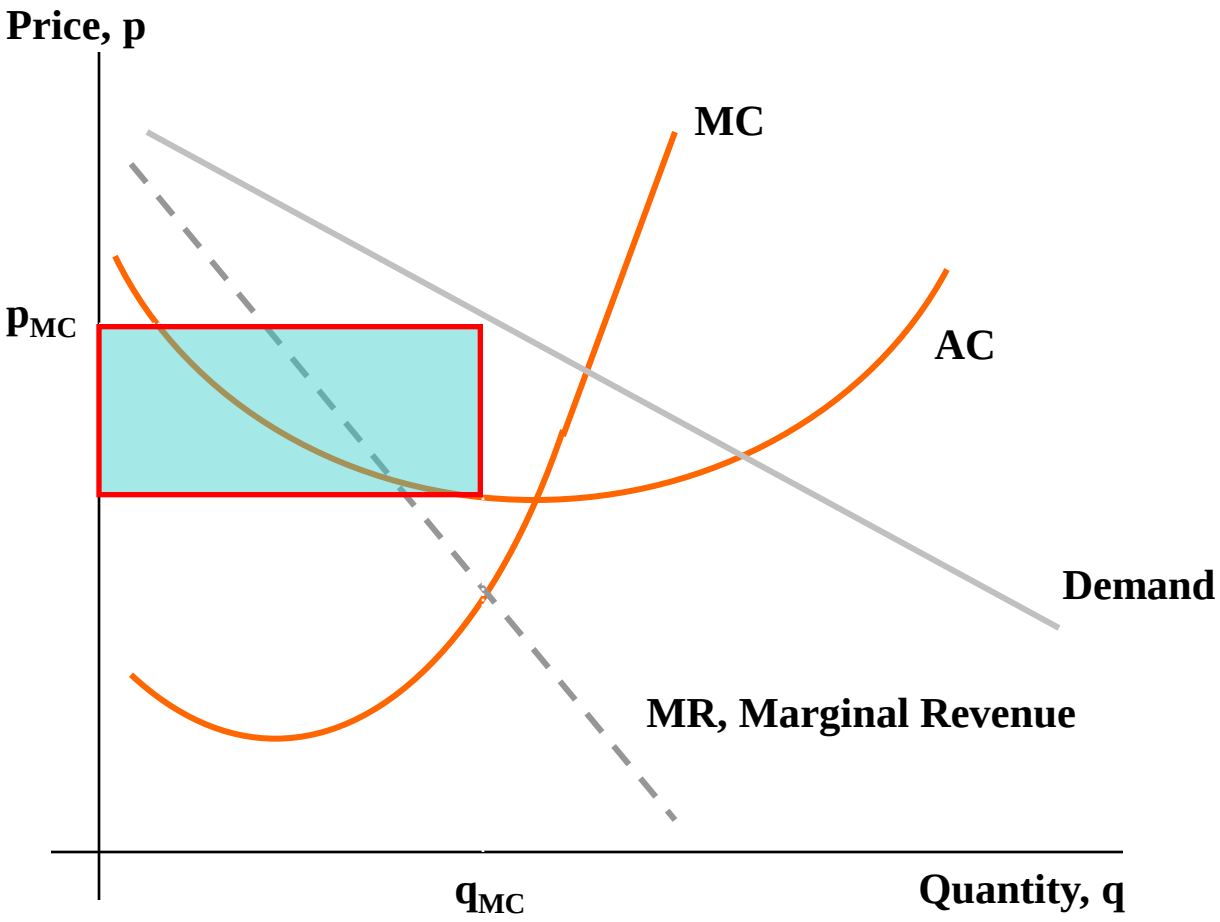
- What is Marg'l Rev?
- MR = Price – Q times (change in P)

Thus MR curve is always below the demand curve and typically steeper





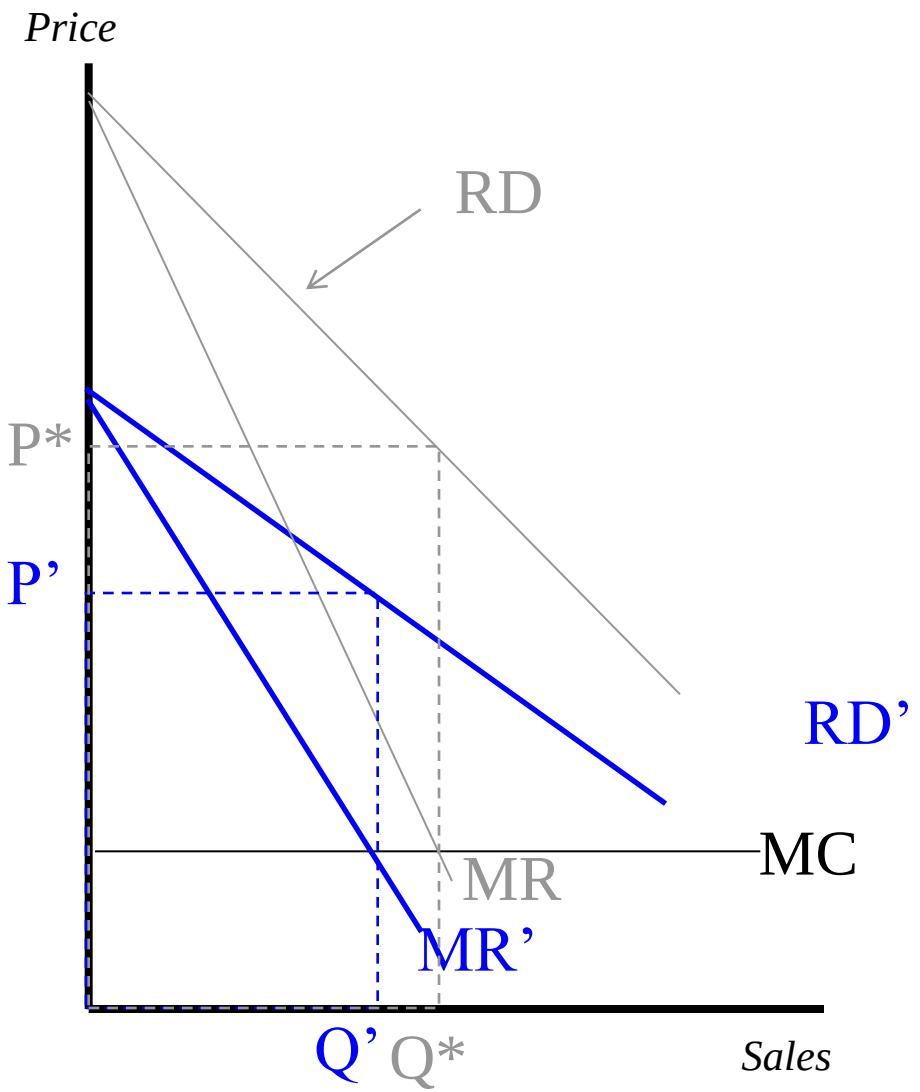
Monopoly sol'n



Monopolistic competition background

- Monopolistic competition is when firms compete with each other indirectly since each firm produces a different variety of the good, say cars, electric motors, chemicals, etc.
- Each firm takes prices of other firms as given and thus views itself as having a monopoly on the "residual demand", i.e. the demand that is leftover after the sales of the other firms are taken account of.
- As more firms enter the market, 2 things happen:
  - Residual demand curve shifts in for each firm (newcomer's sales reduce demand left for others).
    - Always
  - The Residual demand curves become flatter since the varieties are now closer substitutes (i.e. since there are more 'nearby' varieties, the demand for any single variety is more responsive to price changes of other varieties).
    - Often, i.e. not for all goods.

- Graphically, new entrants mean both RD (resid.demand) and MR curve shift down and get flatter.
- This makes each firm lower its price-MC markup, so prices fall.



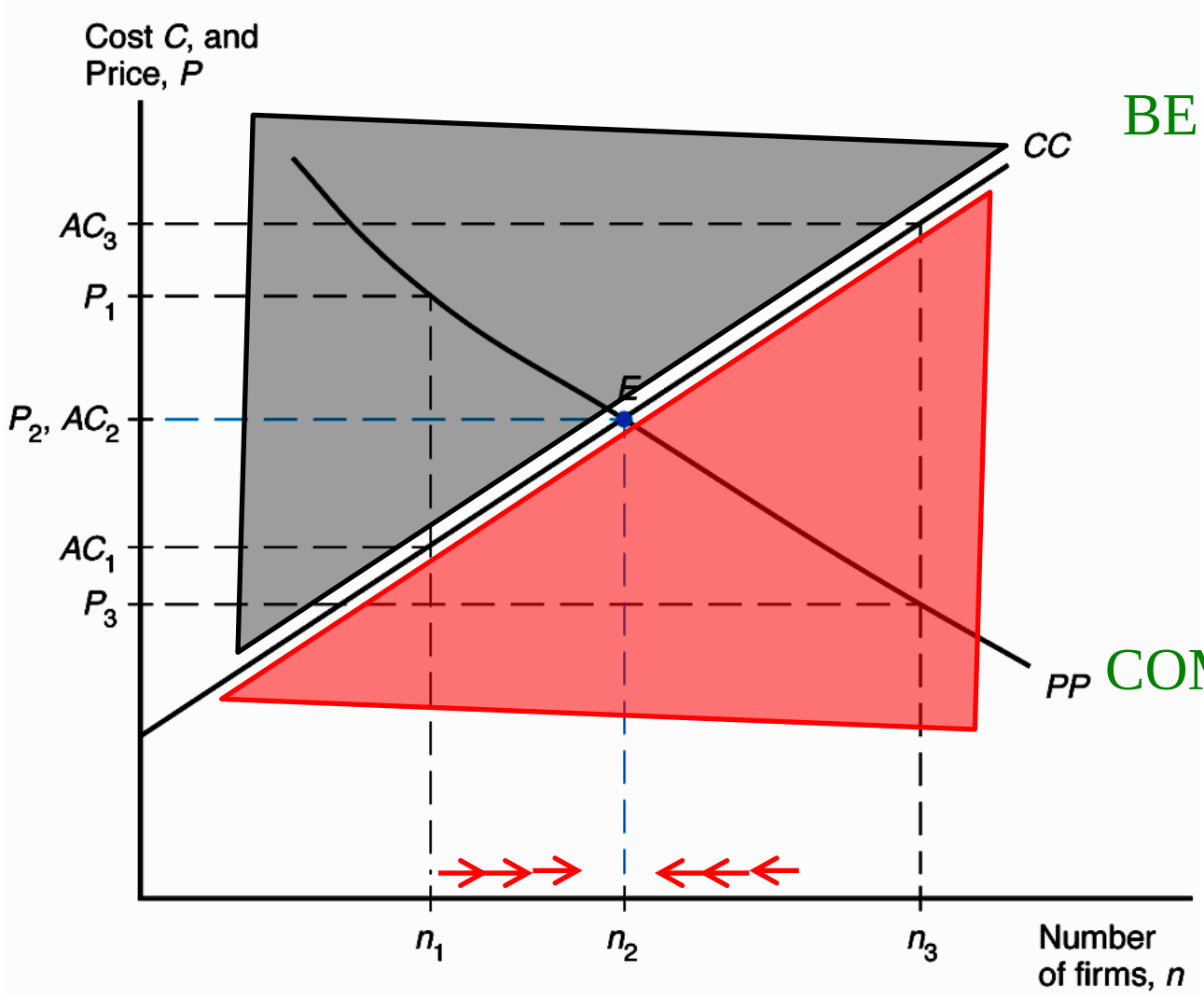
PP-CC diagram

- In the book, Krugman uses maths to make these basic points about IC & IRS.
  - You can skip the math and just read it for ideas
  - Rely on the previous diagram to motivate why more firms leads to lower prices – this is, after all, a very intuitive outcome (more competition, lower prices).

PP curve

- We plot the more-competition-lower-prices relationship as PP.
  - It is enough to understand roughly the logic that more firms in the market would result in a lower price.
  - More detailed understanding, via monopolistic competition model is a plus.

PP-CC diagram



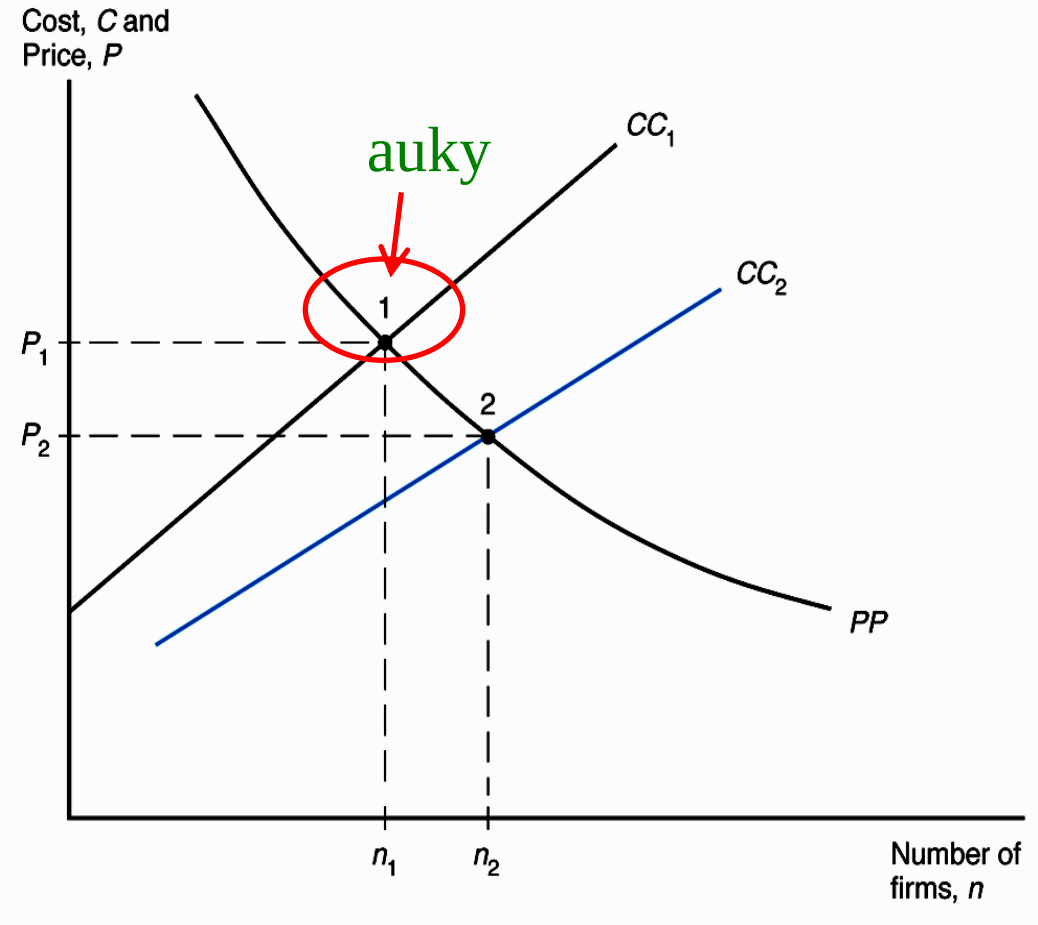
Next we motivate the CC curve.

CC curve

- CC is easy.
- It shows how many firms can ‘break even’, i.e. earn zero profits for any given number of firms.
- The sales of each firm falls as n rises, so firms would need a higher price to breakeven as the number of firms rises.
  - Do examples.
- Plainly there is a tension between the CC and PP; CC is what price they’d need to breakeven, PP is the price that normal competition would lead them to charge.
- Where PP & CC met, firms are charging profit-max prices (MR=MC) *AND* they are breaking even (P=AC).

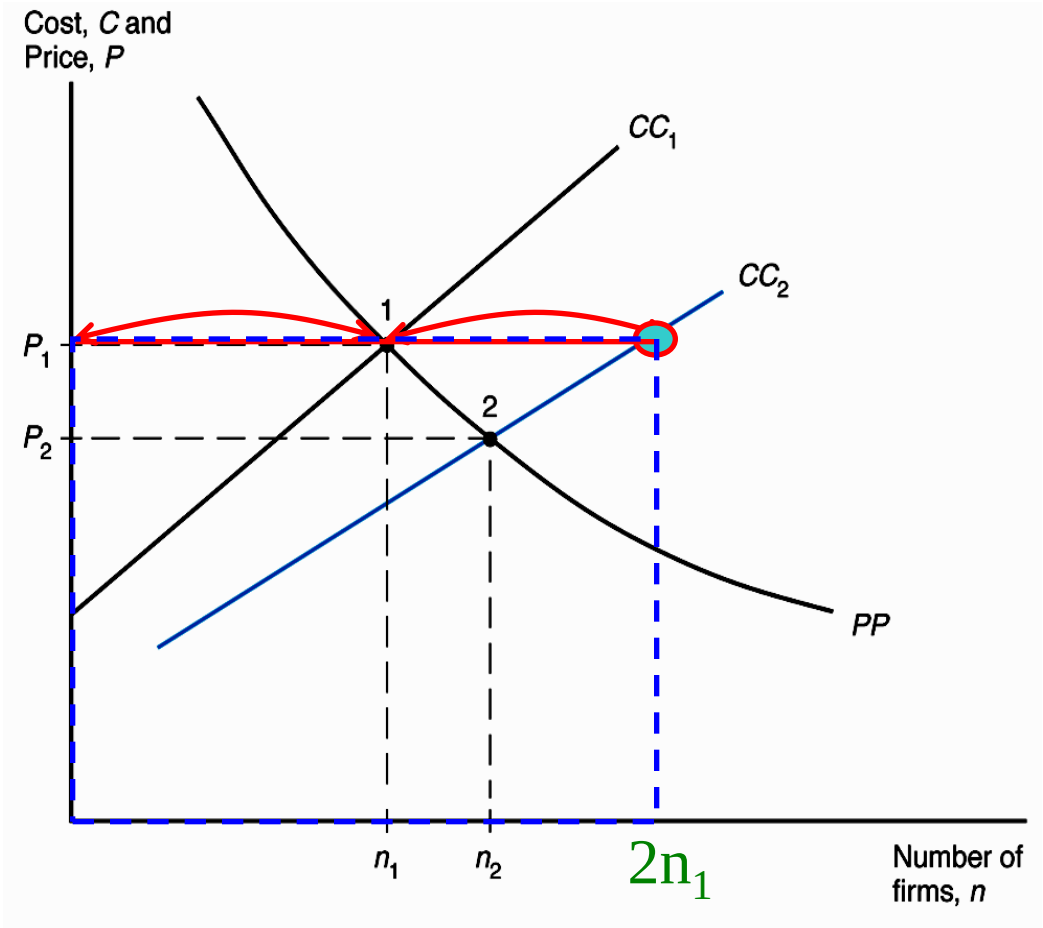
Auk'y equilibrium

- In auk'y the nation's CC is CC_1 and the eq'm is where the price of a typical variety is P_1 and there are n_1 firms.



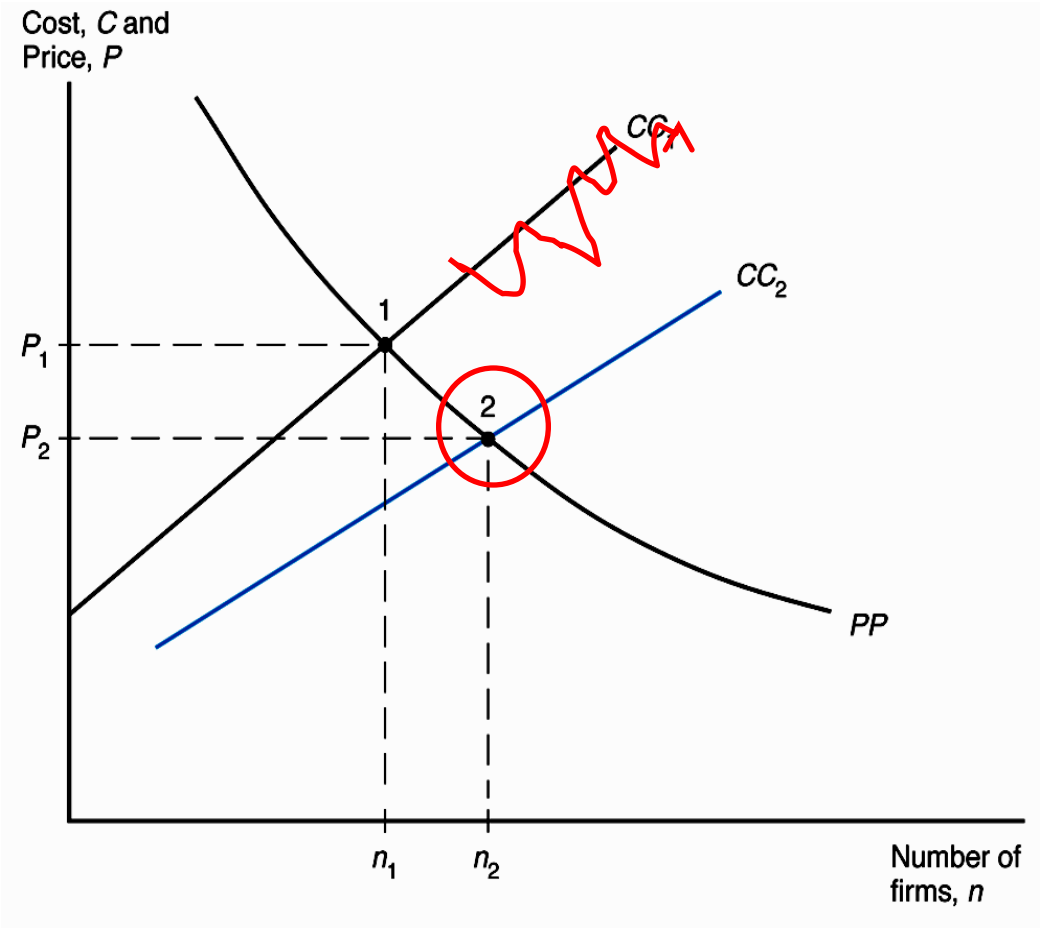
Auk'y to FT shift

- If we have FT between 2 identical nations, the CC shifts out to CC_2.
  - With double the market, more firms can breakeven at the same price
- In fact $2n_1$ firms could break even, if there were no change in price
  - i.e. P_1 stays



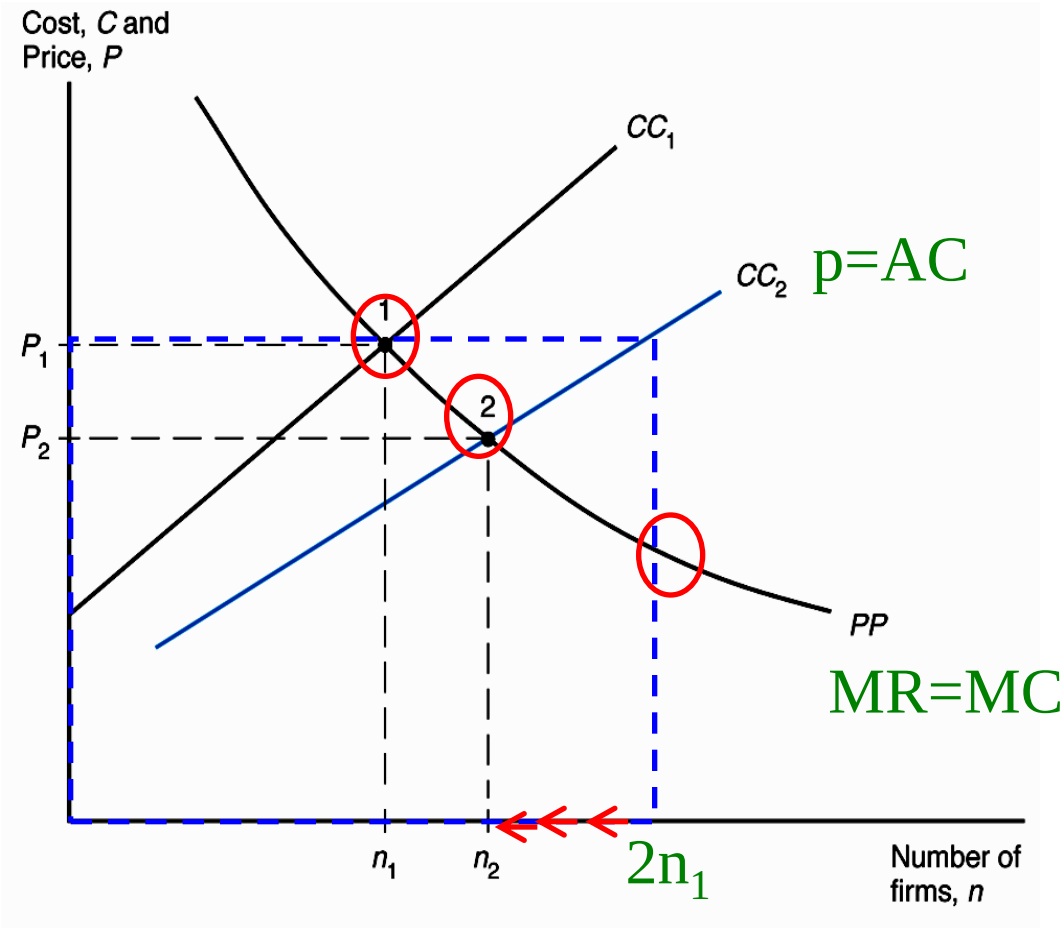
Auk'y to FT shift

- But the extra firms also mean more competition, so new FT eq'm is at point 2.
- NB: The number of varieties available in each nation has risen from n_1 to n_2
  - $n_2 < 2*n_1$ but …
- So some firms have exited and/or merged and/or bankrupt.
- Price of all varieties is lower.



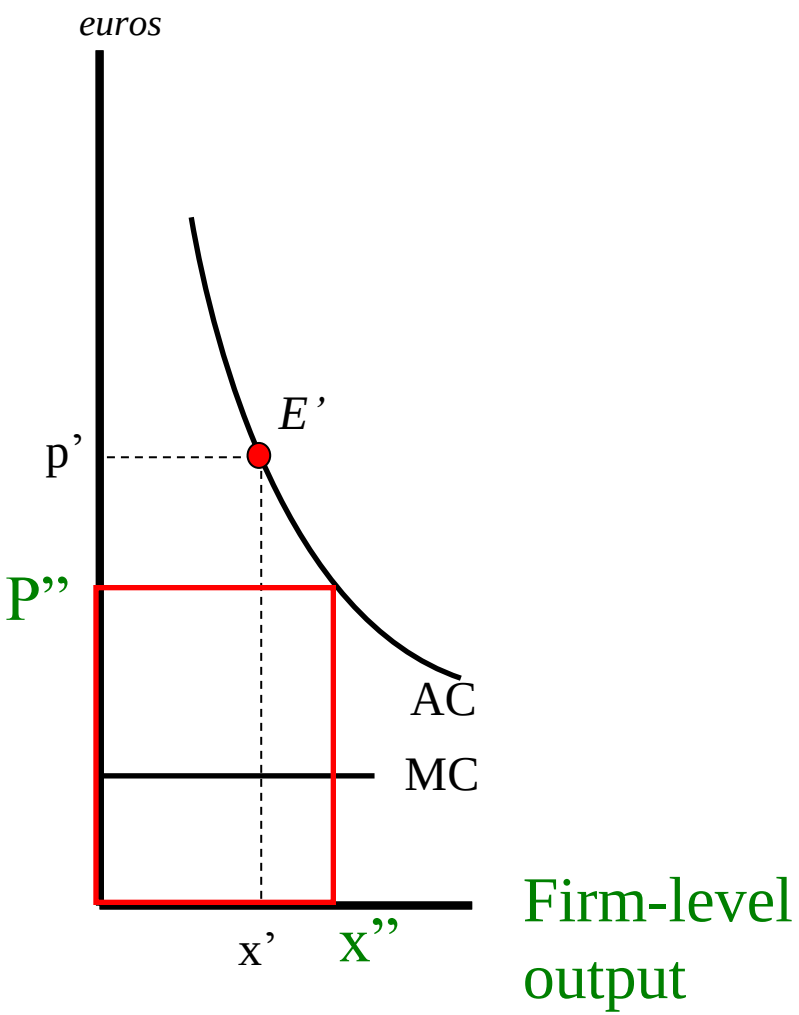
Story

- Auky to FT means bigger mkt but more competition.
- The extra competition pushes down prices, initially to a point where firms are losing money.
- Then ‘industry restructuring until profits are restored at 2.



How can P fall & zero profits?

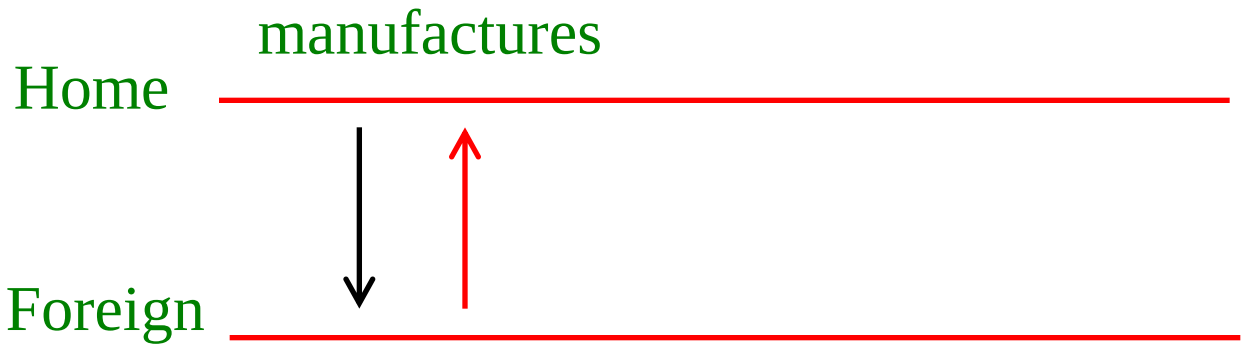
- The presence of internal IRS is the key to the price fall.
- Each of the n_2 firms sells more than they in auk'y.
- Thus they have lower AC and so can charge a lower price and still breakeven.
- NB: zero profits mean P=AC.



Trade implications (Krugman model)

- Here we have 2-way trade between 2 identical nations.
  - "Krugman model of trade" (Krugman 1979 JIE, 1980 AER, 1981 JPE)
- Intra-industry trade only.
  - Home exports manufactured varieties to Foreign and vice versa.
- Scale & pro-competitive effects

Purely intra-industry trade (IIT) in Krugman model.



Gravity model

- Name come law of gravity: gravitational force = M1*M2/distance.
- In trade, bilateral trade flow=GDP1*GDP2/distance
- GDP exporter proxies for the range of varieties for sell
- GDP importer proxies for the demand.
- Distance picks up all the cost of trading.
- Empirically most successful trade model.
- => bilateral trade grows at the sum of the GDP growth rates.

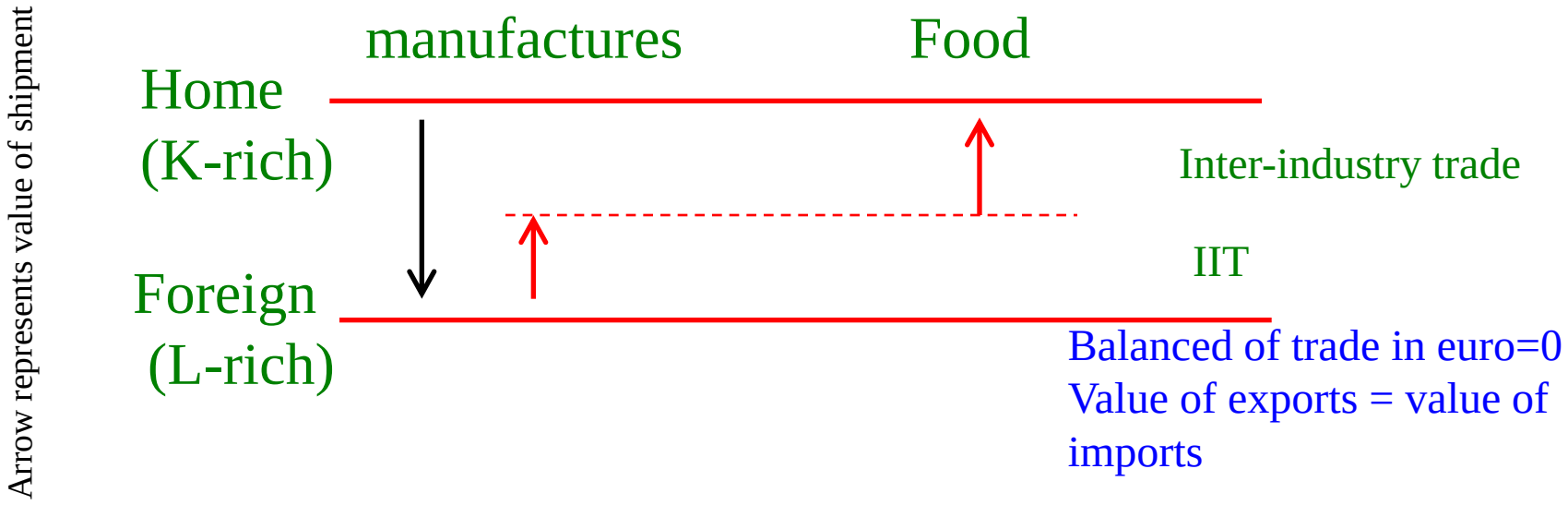
Synthesis model (Old & New)

- Expand the model.
  - We do this mentally rather than in a fully specified model since the concepts are clear from combining the Krugman model with the Std Trade Model. Writing down the full model is complex.
- Now, we allow relative factor-abundance differences between the nations and add a second sector, which is L-intense to manufactures, which is K-intense.
- We get a hybrid of the HO model and the Krugman model
  - This model is often called the Helpman-Krugman model.
- Netting out intra-industry trade (i.e. only looking at a nations exports of manufactures minus its imports of manufactures), the trade pattern follows the HO Thm, i.e. L-rich nations export L-intense goods.
- Plus we have IIT in manufactures.
- Thus we get both intra-industry and inter-industry trade.
  - As nations' relative endowments become more similar (e.g. US and EU) intra-industry trade is more important than for dissimilar nations (EU and Africa, e.g.).

Inter & Intra industry trade

- Helpman-Krugman model shows how inter & intra industry trade can co-exist.
- If different factor endowments, net factor content of trade is as in HO Thm, i.e. if we net out IIT, this is the HO model.

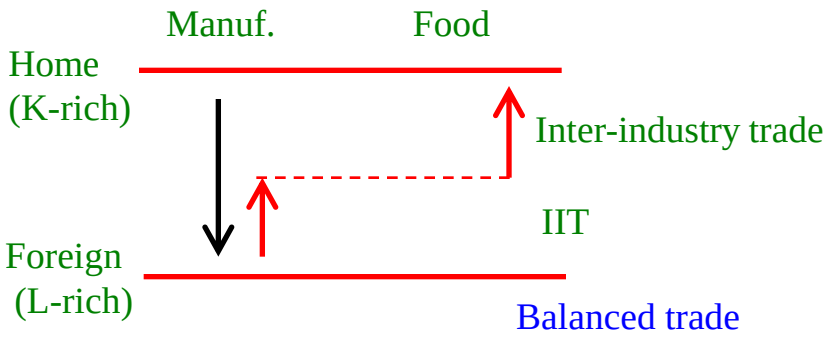
Inter-industry & intra-industry trade (IIT) in Helpman-Krugman model.



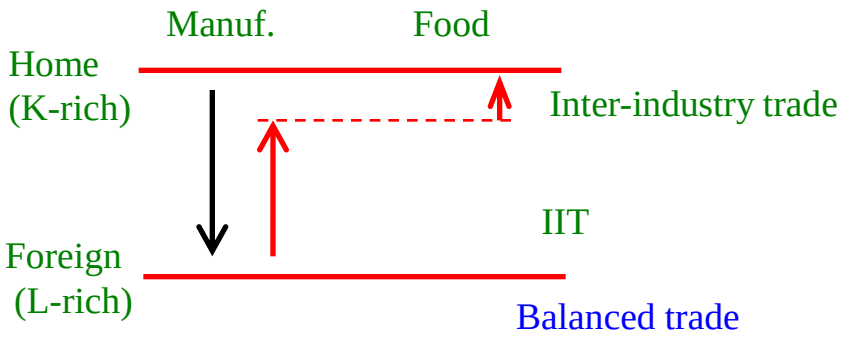
Trade implications (HK model)

- Which countries have more 'IIT' and which have more 'HO trade'?
- As nations' relative endowments become more similar, intra-industry trade is more important than for dissimilar nations.
  - (e.g. EU and Africa mostly HO trade).
  - (e.g. US and EU, mostly IIT)

Inter-& intra-industry trade in HK model (***CASE 1***)



Inter-& intra-industry trade in HK model (***CASE 2***)



What's New?

- Intra-industry and inter-industry trade explained.
  - We had to ignore this trade by netting it out in the old trade theory.
- Predicted relative importance of IIT among similar nations is explained.
- New GFT
  - 1. Variety effect. More variety than in auk'y
  - 2. Pro-competitive & scale effects. Lower prices since extra competition forces remaining firms down their AC curves, i.e. better exploitation of IRS.
- Explains asymmetric political economy of trade liberalisation.
  - North-North liberalisation is easier than North-South
- Idea is that North-North means expansion of both manufacturing sectors with much less much inter-sector reallocation of labour
  - Less or no Stolper-Samuelson effect
  - Less dislocation for labour and firms

Dumping

- Dumping is a big issue in WTO law and in trade policy.
  - You'll have 2 weeks on 'remedies'
- Dumping is defined as:
  - Exporting a good at a price that is below production cost, or
  - Exporting a good at a price that is below the domestic price, or
  - Exporting a good at a price that is below the price charged in a third market.
- Plainly, most forms of 'price discrimination' will be considered dumping
  - All price discrimination is dumping except where domestic price is lowest and all export prices are equal.
- Price discrimination is a normal business practice; firms engage in it domestically
  - e.g. airline tickets, concert tickets, bus tickets, volume discounts, etc.
- In rare cases, dumping may be predatory pricing; original justification for anti-dumping articles in GATT.
  - Discuss predation.

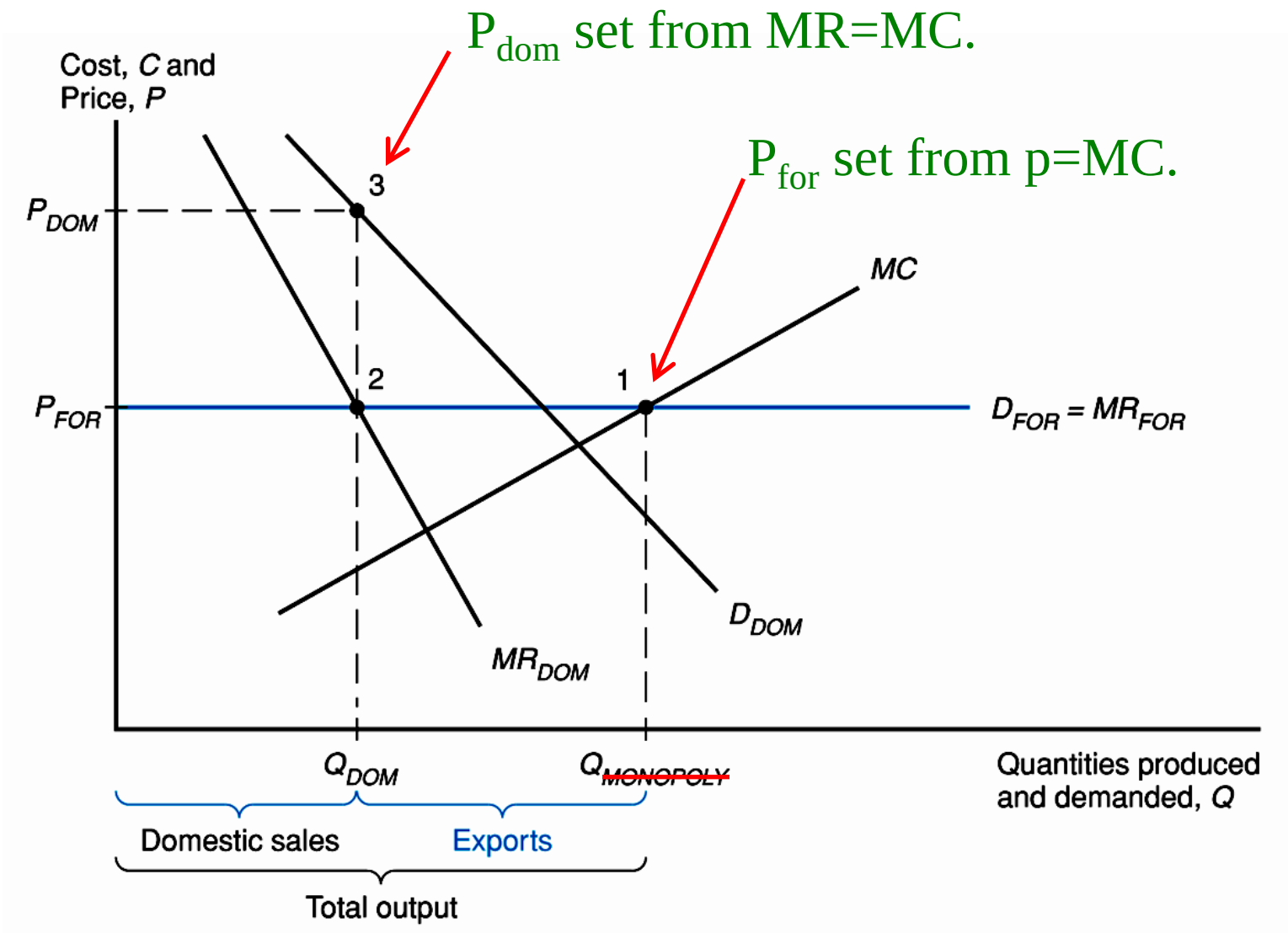
Economics of dumping

- We show a simple situation where a firm will export at a lower price than it sells at home.
- Price discrimination requires IC & 'market segmentation', i.e. the goods cannot be brought back into the country to arbitrage the price difference.
- In Krugman's example, the firm is a monopolist at home but atomistic in foreign market.
  - Firm faces flat demand in foreign market (i.e. amount of sales has no impact on price).
- While this example is extreme, the basic setup is common.
  - Firms are very often more important (e.g. have bigger market shares) in the domestic market than they are in foreign markets. This is called 'market fragmentation'.
    - e.g. Europe's car market

Min. verbal logic

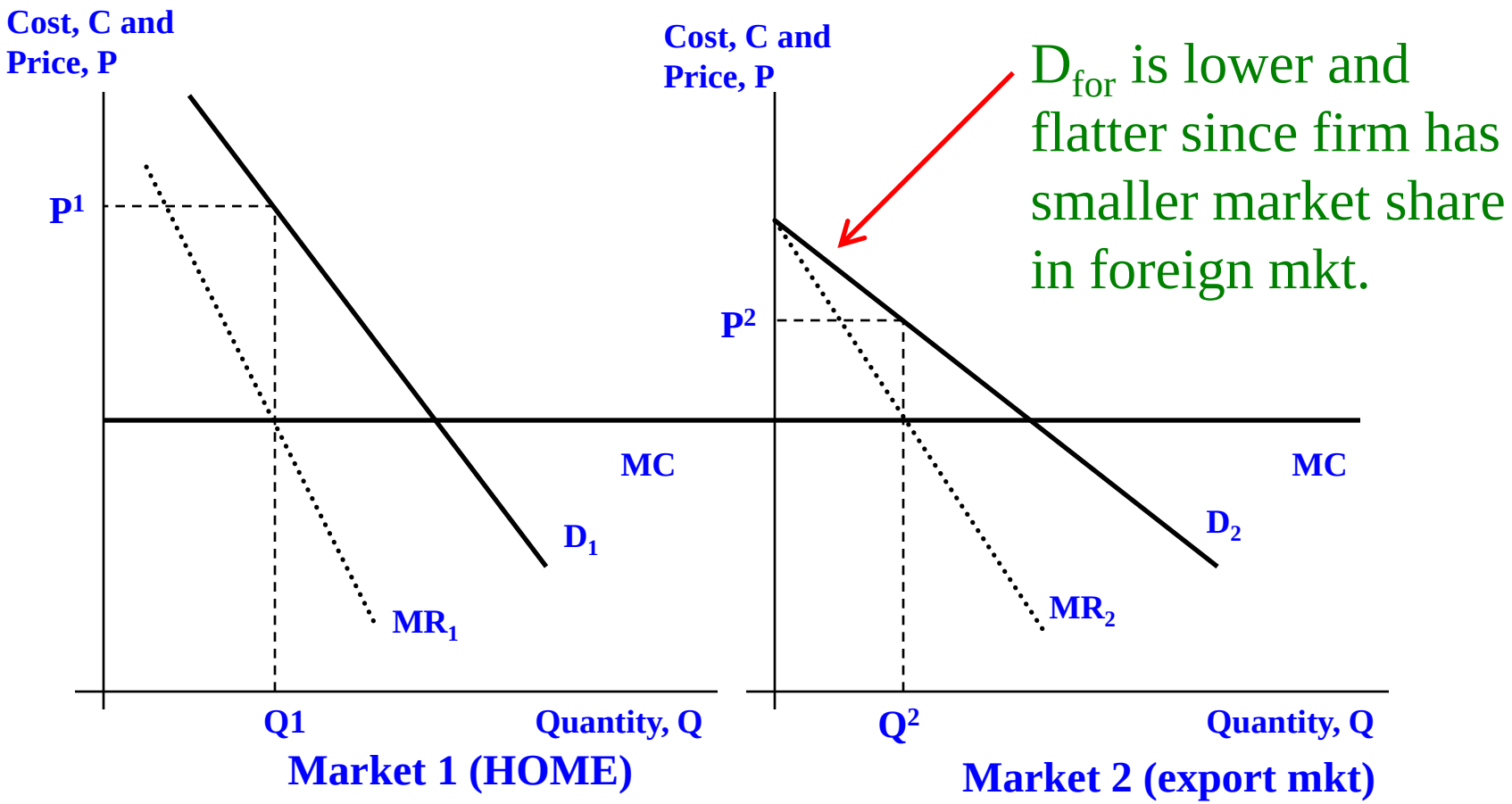
- Before turning to the graphs, here is the minimum verbal logic you need to know (best students will also understand the diagrams).
- Under normal competitive conditions, firms charge a higher price in markets where they have higher market shares. This has nothing to do with unfair competition (predation, etc.)
- Firms typically have higher market shares in their home markets and so typically charge lower prices in export markets.
- Thus ‘dumping’ is usually a ‘normal business practice’.
  - Nevertheless, it was always actionable under GATT and now under the WTO.

Extreme case; monopolist at home, perfectly competitive abroad.



Less extreme case: price discriminating oligopolist

1. **Assume Price-discriminating oligopolist with constant MC across markets.**
2. **Will determine price/quantity in each market as MC =MR_1 = MR_2.**
3. **Result will be different prices in each market depending on market shares**
   Smaller market share means flatter residual demand curve
   Why?



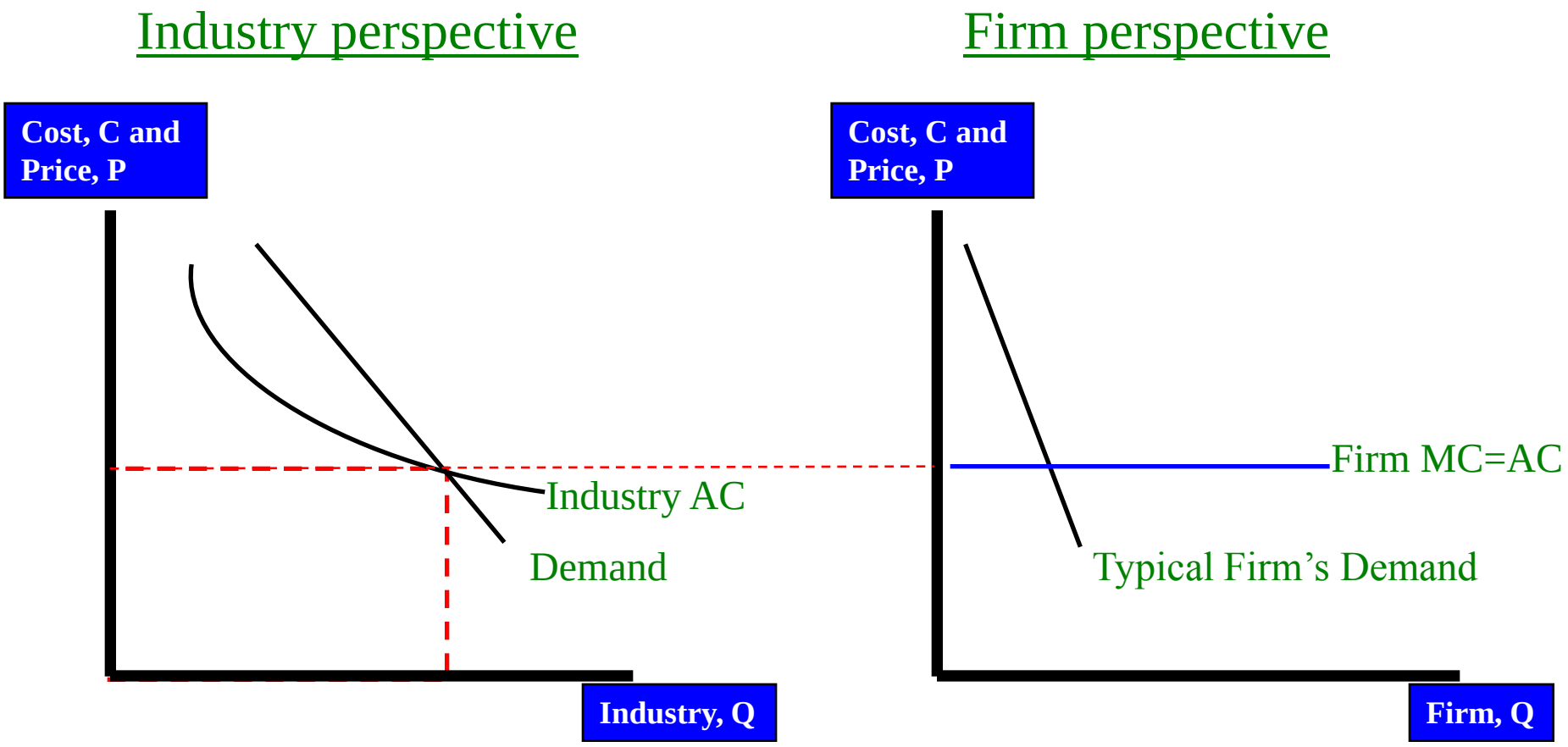
External economies and trade

- Now consider external economies of scale
- Basically asserts that an industrial cluster lowers the cost of firms in the cluster.
- Sources:
  - Specialised suppliers
  - Labour market pooling
  - Knowledge spillovers
- Real world industries do cluster & often hear LDCs say that there industry faces a chicken-and-the-egg problem:
  - There firms would be competitive if there were enough firms in the sector, e.g. electronics in Taiwan.
  - Used to justify ‘Big Push’ development strategy.

External economies: basics

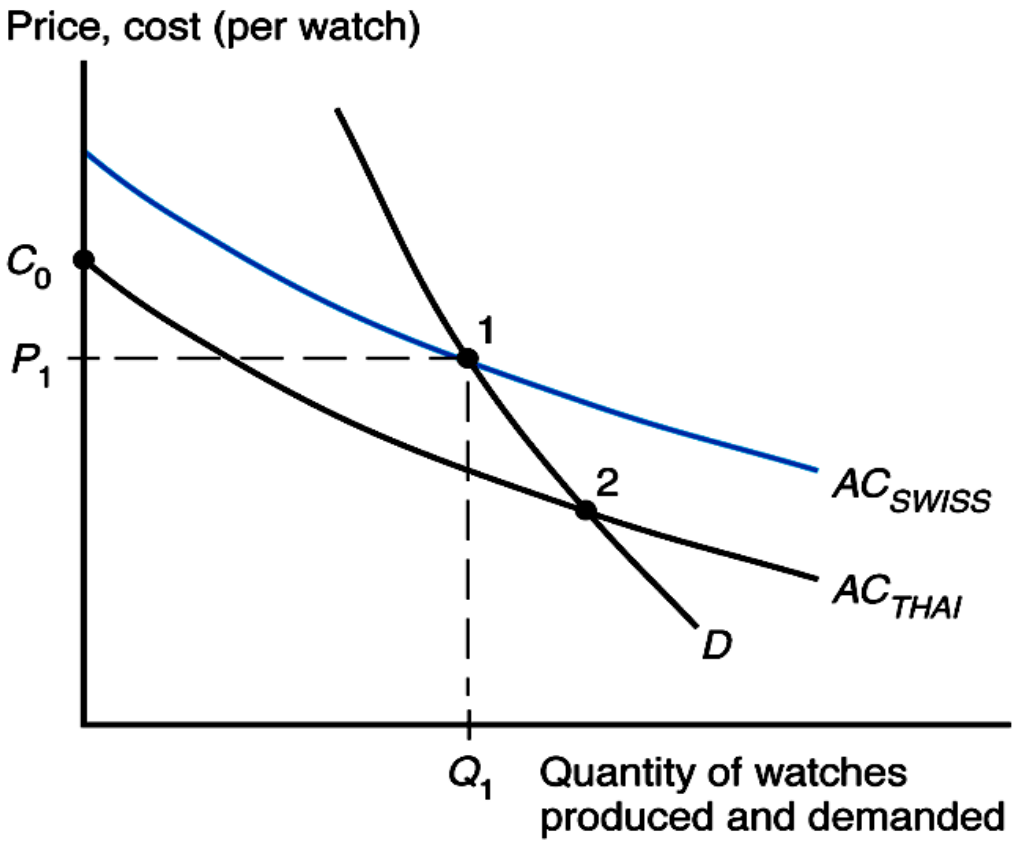
- With scale economies (i.e. falling AC) external to the firm, we can still assume perfect competition.
  - This is easier and thus more convenient, even if less realistic.
- Each firm takes industry output as given.
  - Thus it takes AC as given and assume CRS so AC=MC
  - Do comparison with internal IRS.
- Each PC firm takes market price as given.
- Each firm produces up to point where p=MC=AC (perceived by each PC firm).
- No firm realises that increasing its own output would lower its AC.
  - 'atomistic firms'

External economies: basics



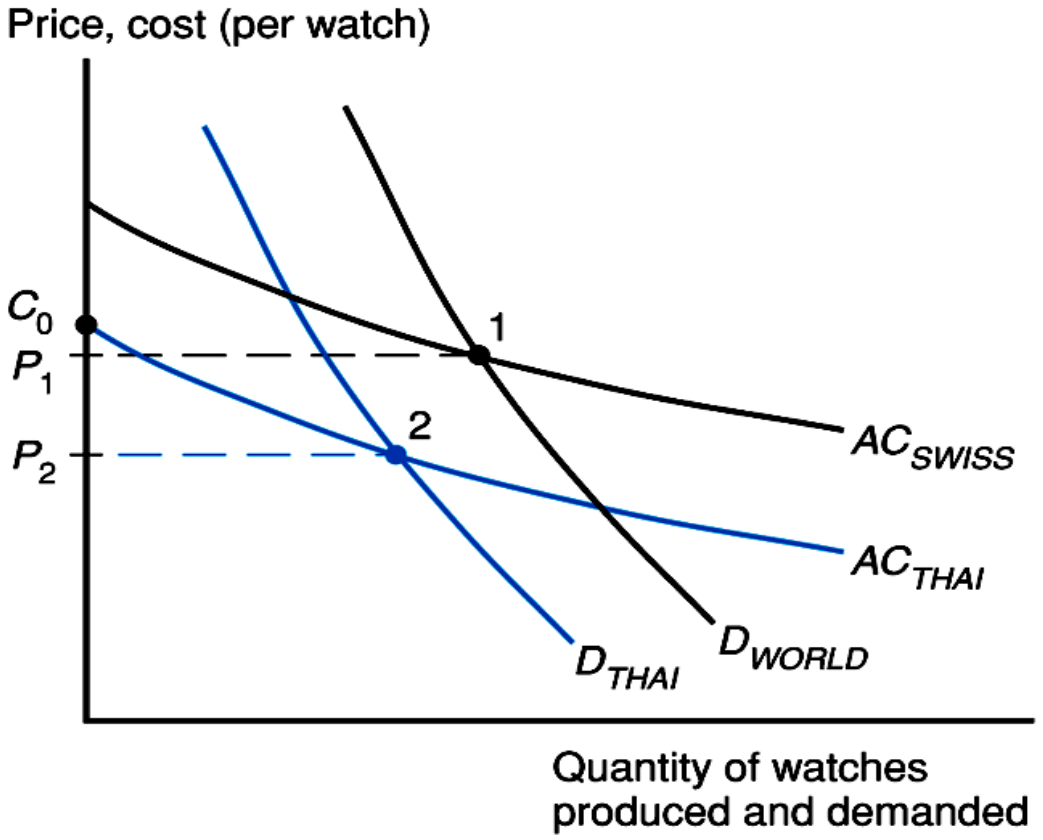
External economies and trade

- External economies can lead to a ‘false comparative disadvantage’
- Here Thai firms would have an absolute advantage over Swiss firms if they produced enough.
  - Historical lock-in.
- Justifies many development strategies.



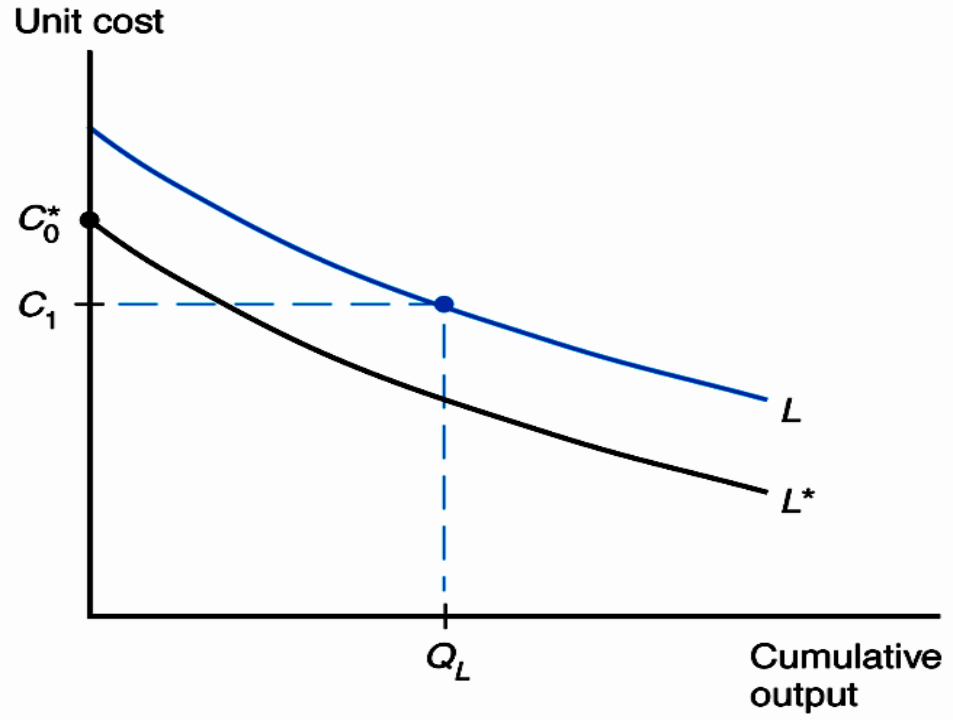
External economies and LFT

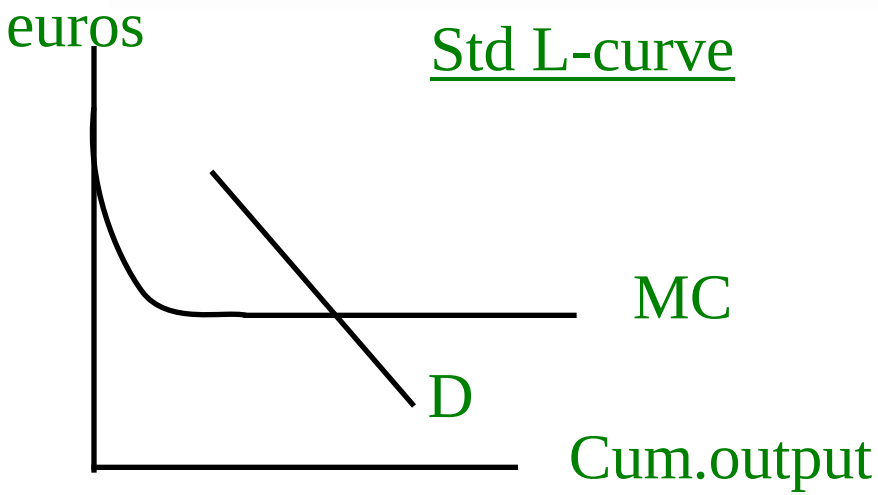
- External economies can lead also to Losses from Trade (LFT).
- See example.
- Basic point: External IRS mean private & public incentives don't match; free mkt need not be efficient.



Dynamic IRS (learning curves)

- Another type of IRS is learning curve.
- Firm's MC falls as its cumulative production rises (i.e. as it gains experience).
- This can lead to both of the new features of external economies (lock-in and LFT).
- Learning curves are important in some high tech industries like aircraft and semiconductors.
- All sectors have learning curves, but it not usually relevant.
  - MC must be falling all at the eq'm point if it is to matter.
- L-curves are sometimes used to justify infant industry trade protection.



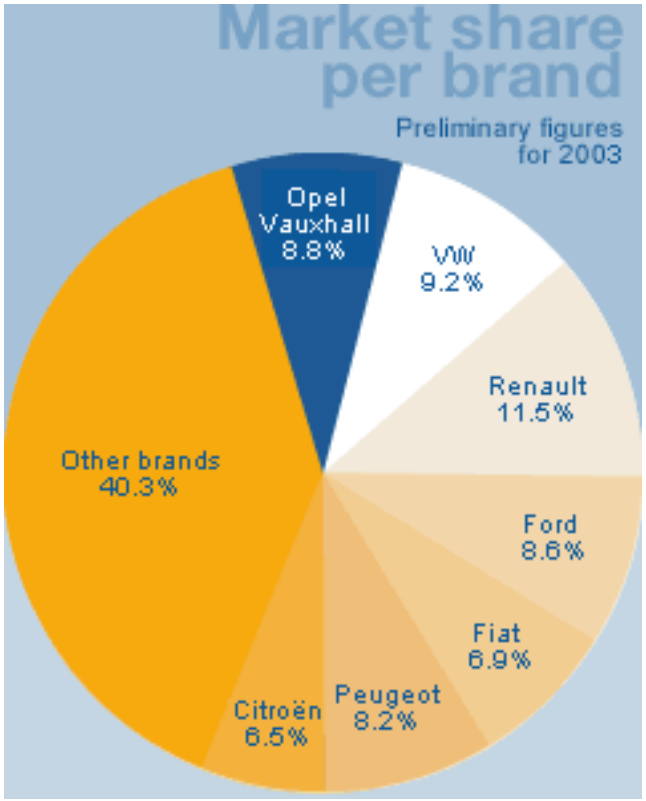


Switch to MNCs (chap 7, last section)

- MNCs are incredibly important to world trading system.
- In rich nations, trade between ‘related parties’ accounts for between 1/3 and ½ of all trade.
- MNCs & development.
- MNCs & trade agreements.
- FDI is not in the WTO (yet).

MNC theory

- Krugman is very lite on the theory of MNCs.
- Basic logic can be seen by questioning the example of US auto firms producing in Europe.
- Opel is owned by US firm GM and sells many cars in Europe.



MNC theory: the 2 questions

- MULTINATIONAL (1) CORPORATION (2)
- Why doesn't GM make the cars in the US and ship them to Europe?
  - Trade costs, broadly interpreted.
- So, there is a reason to make these goods in Europe instead of the US, but why is Opel owned by an American company instead of a European company?
- These are the 2 key questions in MNC theory:
  - Why are production facilities located in many nations?
    - This is the 'Multinational' part of MNC.
  - Why are these production facilities owned by a single firm?
    - This is the 'Corporation' part of MNC.

The 2 questions: answers

- Why are production facilities located in many nations?
  - This is answered by any of the many trade theories we have;
  - 95% of trade theory is location of production theory.
  - NB: transport costs are important considerations in real world, but ignored in our trade theory.
    - Especially when nations have similar c.a. (i.e. the costs of production are not very different, so there is little cost-incentive to concentrate production in one place).
  - examples
- Why are these production facilities owned by a single firm?
  - This is answered by 'theory of the firm'. One of the most common is that the corporation has some firm-specific knowledge that it does not want to license or sell to others.
  - FDI allows the firm to exploit its knowledge without losing control of that knowledge.

Insight: MNCs, advantages approach & gains from FDI

- The fact that an MNC finds it advantageous to produce in another nation and to own that facility suggests that the MNC has certain advantages over host-nation firms.
  - Typically firm-specific know-how of some sort.
- This suggests that MNCs bring with them something positive for host nation.
  - Underpins basic belief that MNCs are good.
  - Contrasts with 1970s view that they were bad.
- Nevertheless, host nation gov’ts should be aware that MNC and national interests are not always aligned and MNCs are not operating in a perfectly competitive environment.

- END