Lecture 18
Economics 181: International Trade
Trade in Industries with Imperfect Competition and Increasing Returns to Scale (IRS)

I. Introduction

- Focus so far on two explanations for trade (1) differences in technology (2) differences in endowments.
- Good for explaining North-South trade, or trade based on differences in natural resources.
- BUT recent patterns of trade indicate that (1) large share of trade between similar countries and (2) alot of two-way trade in the same sector ("intraindustry" trade).
- POINT: trade based on endowment or technology differences cannot explain alot of existing trade patterns.
- Models so far ignored (1) economies of large-scale production (2) spillovers or externalities (3) differentiated products.

II. Different types of Economies of Scale (EOS)

- Internal to firm: firm lowers average cost of production by increasing its ***own*** production
- External to firm: firm's average cost of production falls when ***other firms*** expand their output.
- Static: average cost falls when ***current output levels*** increase
- Dynamic: average cost of production falls when ***the cumulated quantity of past output*** is higher
-

Why might there be a relationship between trade and economies of scale (EOS)?

Example: cars

Output	Total labor input (hours)	Average labor input
5	10	2
10	15	1.5
15	20	1.3
25	30	1.2

Doubling labor inputs means more than doubling output. This is what we mean by increasing returns to scale (IRTS). Could be significant gains from trade:

Pre-trade: US and UK each produce 5 cars, using 10 hours each, totaling 20 hours of labor worldwide
Post-trade: Only the US produces cars, using 15 hours of labor worldwide and freeing up 5 hours for something else.

III. Setting up the framework with internal economies of scale.

Use a framework based on monopolistic competition:
(1) Many producers of a differentiated product: each produces a different variety (cars). Small international economies of scale
(2) Each producer has market power over their own variety. So can affect prices and face a downward-sloping demand curve.
(3) Firms maximize profits
(4) Small barriers to entry and exit, so firms earn zero excess profits in equilibrium.

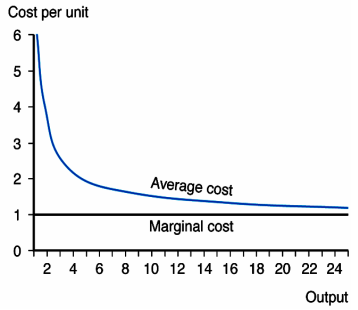
How does a monopolist decide on prices and output?

Q = firm's output
F = fixed cost of production
C = cost per unit

Say

Total costs = CxQ + F
Total revenue = QxP(Q) P is a function of Q because the firm has
Market power and faces a downward sloping
Demand curve.

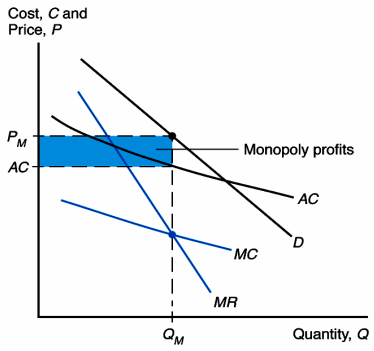
So MC =
MR =
AC =



MC is constant but AC falls as Q rises. AC> MC. We can show this:

Proof that firm sets MR = MC. Maximize profits = QxP(Q) – CxQ – F

Get MR = P – Q/B = C = MC OR P = C + Q/B = MC = markup



At right, firm faces downward sloping demand curve.
MR curve below demand curve. Firm produces where
MR = MC curve. At that P and Q, firm makes excess profits
As defined by distance between P and AC curve.

Now, how does a monopolistically competitive firm decide on prices and output?

A more complicated formulation of demand. Basically, make markup depend on number of firms. Idea is that markup falls when the number of firms, n, rises. So we have:

P = MC + markup = MC + 1/bxn

So as n rises, P falls. We can draw this relationship between the number of firms and price as a downward sloping PP curve.

What happens to cost as the number of firms rises?

Intuitively, expect average cost AC to rise with an increase in the
Number of firms, because too little output is spread over fixed costs (recall
Diagram above that shows AC falls with output).

Proof:Must be true that total revenue = total costs
So PxQ = F + CxQ

Dividing through by Q: P = AC = F/Q + C
If market output S = nxQ, then we can substitute:
P = AC = nF/S + C. As n rises, AC rises so CC curve slopes upwards.