International Trade: Monopolistic Competition Model

Plan for Today...

- Monopolistic Competition Model (Autarky).
- Next class: Trade and numerical examples.
  Point Change in Temporary Migration

Big Idea #1 Product Differentiation

- Most firms produce goods that are differentiated. Examples:
  - Beer, Cars, Computers, etc.
- Product differentiation gives firms market power (i.e. firms can set the price they charge for the good).
- However, this is not a pure monopoly. Firms must still compete with close substitutes of their product. Examples:
  - Blue Moon competes with Budwiser
  - Apple competes with PCs, Android OS cell-phones, etc.

Big Idea #2 Increasing Returns to Scale

- Firms have various types of fixed costs.
- This implies that as a firm increases its quantity produced, average costs decline.
  - This is equivalent to our discussion about production functions. The Cobb-Douglas production function had constant average costs, thus constant returns to scale.
- This gives incentives for firms to enter foreign markets.
  - If a firm is able to sell more, its average costs decline.
  - Profits increase. Why?

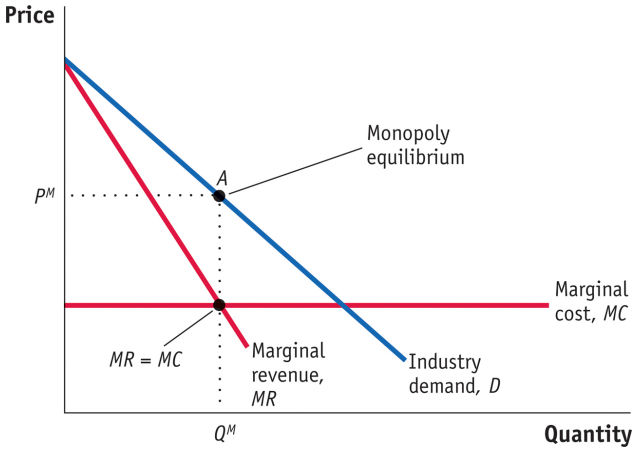
    Per-unit Profits = price - average costs.

Gains from Trade

- Gains from trade in the monopolistic competition model:
  - Increase in product variety as foreign firms enter the domestic market. (I can drink Budwiser and Pilsner Urquel!)
  - Reductions in monopoly power leads to lower prices. (Price of Budwiser declines due to Pilsner Urquel's entry.)
  - The least productive firms exit. This leads to a TFP gain as only the most productive firms operate.
    - Some domestic firms will have price $<$ average cost and exit.

      Have you ever heard of Olympia/Hamms/Strohs beer?

Monopoly Recap



Assumptions of the M.C. Model

1. Firm = differentiated product.
2. A firm chooses its price and production, taking other firms' pricing and production decisions as given.
3. Firms have (a) constant marginal costs and (b) decreasing average costs.
4. Each firm is identical (in costs and demand).
5. Free entry and exit in the long run, thus profits = 0 in the long run.

   This means in the long run, price = average cost.

Firm Demand...

The demand curve the typical firm faces is

$$Q = S \times \left[\frac{1}{n} - b \times (P - \bar{P})\right].$$

- S = total industry demand; n = number of firms;
- b = elasticity of demand parameter.
- P = price set by firm; $\bar{P}$ = average price in industry.
- How does demand depend on each of these things?

Firm Costs...

The total costs of a typical firm are

$$C = F + c \times Q.$$

Note that this implies...

- Average costs are

$$AC = \frac{F}{Q} + c.$$

- Marginal costs are

$$MC = c.$$

Autarky Equillibrium...

Basic idea is the following:

- Set $MR = MC$, see how the price depends on the number of firms.
- Show how average costs depend on the number of firms.
- Set $P = AC$ determining the equilibrium number of firms and and price.

A couple of things to keep in mind...

- Since all firms are symmetric, they will charge the same price. This means that $P = \bar{P}$.
- Since all firms charge the same price, the quantity sold by each firm is $Q = \frac{S}{n}$.

Marginal Revenue = Marginal Costs

Marginal Revenue is

$$MR = P - \frac{Q}{S \times b}$$

$$= P - \frac{1}{n \times b}$$

where the last step follows from $Q = \frac{S}{n}$.

Equate this with marginal costs giving...

$$P = c + \underbrace{\frac{1}{n \times b}}_{\text{Markup}}.$$

How does the price (and markup) depend on the number of firms?

Average Costs

Average costs are

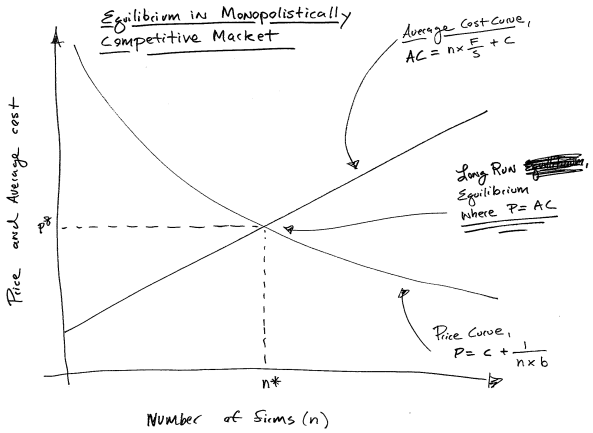
$$AC = \frac{F}{Q} + c,$$

$$= n \times \frac{F}{S} + c$$

where the last step follows from $Q = \frac{S}{n}$.

How do average costs depend on the number of firms? Why?

Long-Run Equilibrium Without Trade



Long-Run Explanation

1. Prices decline with the number of firms. Why?

   More firms $\Rightarrow$ each individual firm has less market power, thus markups decline.

2. Average costs increase with the number of firms. Why?

   Total industry demand S is fixed. So each individual firm's sales are lower. This implies their average costs go up.

3. Long-Run Equilibrium is where $P = AC$.

   Why does this make sense?