Perfect Competition

K. Graddy
Industrial Organization

Outline

- Understanding Perfect Competition
  - Differences Between Short Run and Long-Run
  - Elasticities
- Contestable Markets
- Sources of Barriers to Entry
- First Theorem of Welfare Economics

Intuition of Perfect Competition

Basic Assumptions

- Homogeneous Perfectly Divisible Output
- Perfect Information
- No Transaction Costs
- Price Taking
- No Externalities

Graphs of Perfect Competition

Perfect Competition

Consumer Surplus

Perfect Competition

Industrial Organization

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Math of Perfect Competition

Profits = Revenue - Costs
\[ \pi = R - C \]

FOC: MR = MC
\[ \pi = pq - C(q) \]
\[ \max \pi = pq - C(q) \]
\[ p - C'(q) = 0 \]
\[ p = C'(q) \]

Short-run Supply Curve of the Industry

- In the short run the number of firms is fixed – (No entry or exit)
- Therefore Industry SRS is simply the horizontal sum of all the current Firms’ SRS curves

Adjustment Towards Long-run Equilibrium

Therefore, with identical firms, horizontal long-run industry supply curve
Efficiency of Perfect Competition

- Output is produced at Minimum Average Cost
- Price is equal to Minimum Average Cost
- Supernormal Profit competed away
  - Zero Economic Profit remains
- Price is equal to Marginal Cost

What happens if firms aren’t identical?

- Can positive economic profits be consistent with long-run competitive equilibrium?
- What is the marginal cost of the last unit sold if firms are not identical and one firm is capacity constrained (i.e., is it the MC of the high-cost firm or the low-cost firm)?
- How much profit do the less efficient firms earn?
- In the long-run competitive equilibrium, must the profit of the marginal entrant be zero?

Elasticity of demand:

Percentage change in output resulting from a 1% change in price.

\[ \eta = \frac{\Delta Q}{Q} \frac{\Delta P}{P} \]

Elasticity is units free

\[ \eta = \frac{\Delta Q}{\Delta P} \]

slope normalization

Elasticity is not the same as the slope

More elastic
- Higher slope
- Constant Slope
- Constant Elasticity

Less elastic
- Lower slope

However, we often say:

- Perfectly elastic
- Perfectly inelastic
Elasticities and Revenue

- If \( \eta < -1 \), demand is elastic
  - i.e. \(|\Delta Q/Q| > |\Delta P/P|\)
  - quantity effect is greater than price effect
  - \( P \quad Q \quad R \quad (Luxury \ domestic \ cars, \ \eta = 1.91) \)

- If \(-1 < \eta < 0\), demand is inelastic
  - i.e. \(|\Delta Q/Q| < |\Delta P/P|\)
  - \( P \quad R \quad (Cigarettes, \ \eta = 0.75) \)

Discussion: Is a Fish Market Perfectly Competitive?

- Results: With increasing returns to scale the following conclusions are predicted
  - There is a unique operating firm in the industry
  - This firm makes zero profits
  - Average-cost pricing prevails

- In the absence of competition, potential entry is very effective in disciplining incumbent firms – this theory presents a strong argument against regulation or nationalization of utilities

- Criticism: Generally believed that prices adjust more rapidly than decisions about quantity or entry

Ultra Free Entry: Contestable Markets (Baumol 1982)

- Assumptions
  - Homogeneous goods
  - Firms set prices
  - No sunk costs
  - Free entry and exit
  - Entrant may enter and undercut rival before incumbent is able to respond

Barriers to Entry

- Economies of scale
- Absolute cost advantages
  - Scarce resources
  - Legal barriers
  - Patents
  - Learning

- Product Differentiation
  - Location
  - Switching costs
  - Complementary goods
- Capital Raising Requirements

Problems with Perfect Competition: Barriers to Entry

- Bain defined a BTE as anything which allows incumbent firms to earn supernormal profits without the threat of entry. He asserted that there are four elements of market structure which give rise to barriers to entry:
In Conclusion: First Theorem of Welfare Economics

- Markets in Competitive Equilibrium are "Pareto Efficient"

Conclusion

- Perfect Competition in the Long-Run and Short Run
- Contestable Markets
- Sources of Barriers to Entry
- First Theorem of Welfare Economics